FE257

WIRE DRAG

Diagram No. 1212-2

NOAA FORM 76-35A

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

DESCRIPTIVE REPORT

Type of Survey Wire Drag & Side Scan Sonar

Field No. R/H-20-11-83-R/H-20-13-83/84

Registery No. FE-257WD

LOCALITY

State New York

General Locality Long Island Sound

Sublocality Southeast of Sixmile Reef

1983-84

CHIEF OF PARTY

LCDR D.D. Winter & LCDR R. K. Norris

LIBRARY & ARCHIVES

DATE July 17, 1985

☆U.S. GOV. PRINTING OFFICE: 1985—566-054

FE257
WIRE DRAG

Area I
CHTS
12358 } to sign off see
12354 } Record of Applications

NOAA FORM 77-28 (11-72)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

REGISTER NO.

FE-257 WD

HYDROGRAPHIC TITLE SHEET

INSTRUCTIONS - The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

FIELD NO.

R/H 20-11-83

State NEW YORK

General locality LONG ISLAND SOUND

Locality ~~AWOIS #02729 AND AWOIS #02730~~ Southeast of Sixmile Reef

Scale 1:20,000 Date of survey 24 AUGUST 1983

Instructions dated ~~22 JULY~~ 17 June 1983 Project No. OPR-B660-RU/HE-83

Vessel NOAA SHIPS RUDE (9040) AND HECK (9140)

Chief of party LCDR D. D. WINTER

Surveyed by LCDR D.D. WINTER, LT N.G. MILLETT, LT E.M. CLARK, ENS T.G. CALLAHAN

Soundings taken by echo sounder, ~~hand lead, pole~~ ECHO SOUNDER, Side Scan Sonar, Wire Drag

Graphic record scaled by ENS T.G. CALLAHAN, G.L. ANDERSEN

Graphic record checked by ENS T.G. CALLAHAN, G.L. ANDERSEN

Protracted by N/A Automated plot by N/A

Verification by Hydrographic Surveys Branch, Evaluation and Analysis Group, A.M.C.

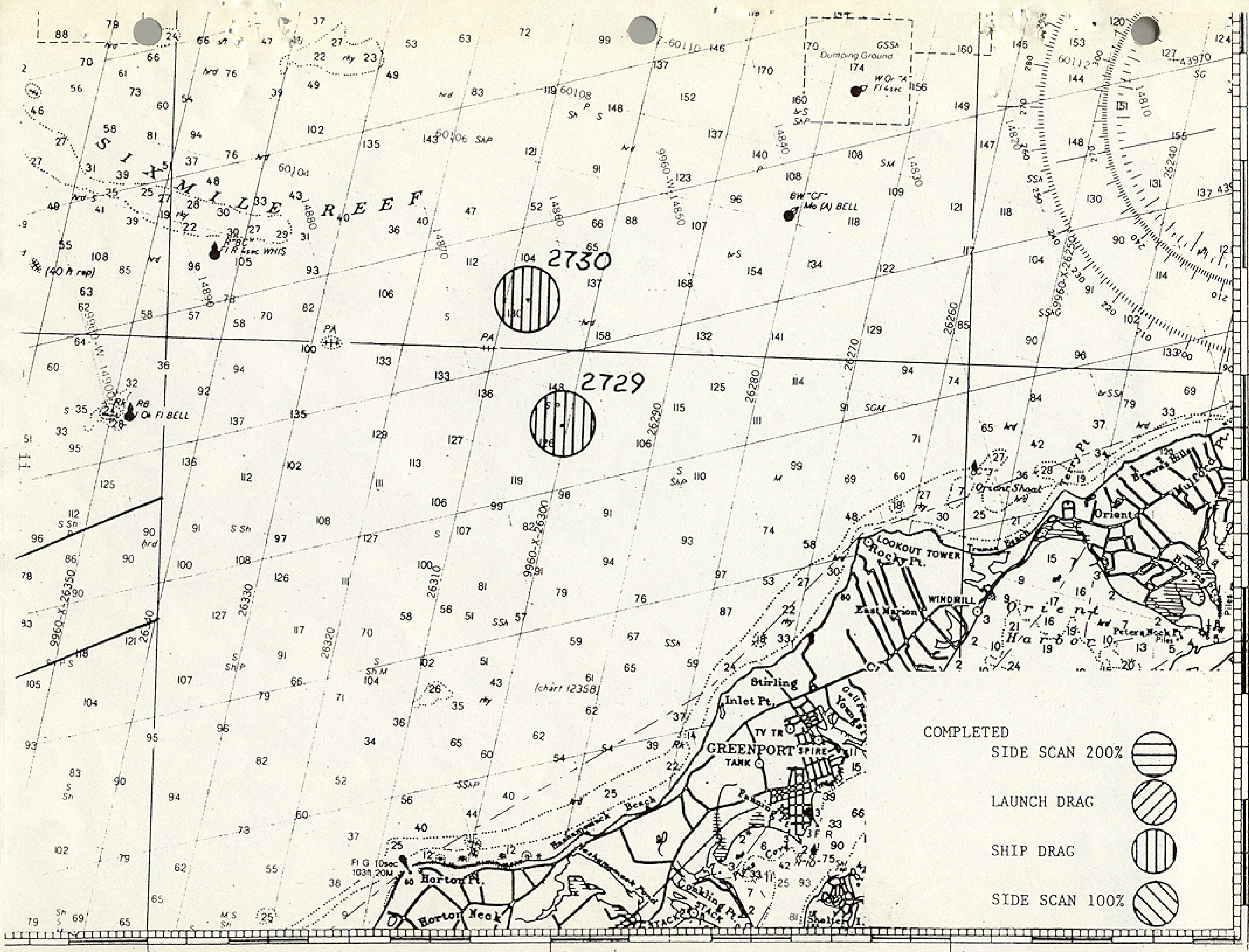
Soundings in ~~fathoms~~ feet at ~~MLW~~ MLLW ~~MLLW~~ ~~FOR PREDICTED TIDES~~ Smooth Tides Applied

REMARKS: ALL TIMES RECORDED IN UTC

AWOIS and SURF ✓ RWD 5/87

NOAA FORM 77-28 SUPERSEDES FORM C&GS-537

☆ U.S. GPO: 1974-0-768-081/1207



SIX MILE REEF
2730
2729
Dumping Ground
BW "CF" Mo (A) BELL
RB Qk Fl BELL
(chart 12358)
Orient Shoal
Orient
LOOKOUT TOWER
Rocky Pt.
WINDMILL
East Marion
Orient Harbor
Stirling
Inlet Pt.
GREENPORT
SPIRE
TANK
TV TR
Horton Pt.
Horton Neck
Hashamomuck Beach
Conkling Pt.
Shelter I.
72°30′
25′
20′
41
COMPLETED
SIDE SCAN 200%
LAUNCH DRAG
SHIP DRAG
SIDE SCAN 100%

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*Data removed from the Descriptive Report and filed with the field records.

DESCRIPTIVE REPORT TO ACCOMPANY
HYDROGRAPHIC SURVEY ~~H-~~FE-257WD, R/H 20-11-83
1:20,000 SCALE, 1983
NOAA SHIPS RUDE & HECK
LCDR DONALD D. WINTER, COMDG.

A. Project Authority

This project was conducted in accordance with Hydrographic Project Instructions OPR-B660-RU/HE-83, Southern New England Coast, dated 17 June 1983. Two amendments to the project instructions were Change No. 1 dated 22 July, 1983 and Change No. 2 dated 8 December, 1983. The purpose of this project was to verify or disprove certain reported submersed wrecks along the south coast of New England, to provide clearance depths over selected wreck sites, and to provide wire-drag clearance of the Northville Industries Corporation oil tanker route.

B. Characteristics and Limits of Area Surveyed

This report contains two ship wire drag strips, each .5 nautical miles wide and with a combined lineal distance of 3.21 nautical miles.

Ship wire drag strip 01 of JD 236 (Strip A-1) was conducted to clear the contact at the position latitude 41°-10'-29.52"N., longitude 072°-25'-34.4"W., protruding 8.0 feet off the bottom in 136 feet of water. The contact was suspected to be the wreckage of the Barateria, which was classified as No. 01813 on the AWOIS listing for (1982) and renumbered (July 20, 1983) AWOIS NO. 02730.

The contact at latitude 41°-09'-19.25"N., longitude 072°-25'-04.09"W, which protrudes 9.5 feet off the bottom in 131 feet of water was cleared by ship wire drag on strip 03 of JD 236. (Strip A-3) The contact at this position was most probably that of the Thames, (1982) AWOIS No. 01814, which was renumbered (July 20,1983) AWOIS No. 02729. Strip A-2 (02 of JD 236) was rejected due to excessive lifts.

C. Survey Vessels

The NOAA Ships Rude (vesno 9040) and Heck (vesno 9140) conducted the wire drags for this survey .

D. Hydrographic Sheets

The field hydrographic sheets used in this survey were made of mylar and were constructed with the Disital PDP 11/34 computer and Houston Instrument roll-bed plotter aboard the NOAA Ship Rude. Four copies of field sheet R/H 20-11-83 were plotted at a scale of 1:20,000. Two copies of the field sheet are titled R/H 20-11A-83 and contain the hand plots of the vessel's positions taken while on line during the wire drag operations on JD 236. Two smooth field sheets were plotted aboard the Rude while on line using the same equipment as described above. Field sheet R/H 20-11B-83 depicts the area covered by wire drag operations on AWOIS # 02729, drag strip JD 236-01. Drag strip JD 236-03 was

computer plotted on smooth field sheet R/H 20-11C-83 for AWOIS No. 02730. Drag strip 02 was not plotted or used because the strip was run against the tidal currents at depth, resulting in excessive lifts. The field records are being fowarded to the Atlantic Marine Center for verification and smooth plottings.

E. Equipment and Techniques

The ship wire drag operations were conducted using standard wire drag equipment and techniques at effective depths greater than 70 feet. Numerous lobster pots were encountered in the survey area. The launches were used to test the drags and the drags were tested often.

Ship wire drag operations utilized five (5) intermediate and two (2) end buoys with 600 foot sections. The drag uprights were set to obtain effective depths greater than 70 feet. The ship wire drag conducted for the AWOIS item No. 02729 developed effective depths of 75 feet over the item. The wire drag operation for AWOIS No. 02730 established an effective depth of 79 feet over the item. Both drags were run in one direction with the prevailing tidal currents, at depth, while maintaining a predetermined track line.

Del Norte rates obtained on fixes were recorded with Eaton Model 7000+ serial printers during this survey. These printers worked fairly well considering the fact that they were not designed to be operated in a marine environmemt. The printers would often print out a line of meaningless characters or rates from the previous fix before the current fix was recorded. The records were annotated such that these meaningless characters and extraneous rates were lined out leaving the corrected fix rates clearly displayed.

A Raytheon model DE-719B echo sounder, serial no. 6212, was operated and annotated during drag operations on the Heck for wire drag strip 03. Although it is not anticipated that these soundings records will be used for charting purposes, the settlement and squat data for the Rude and Heck, obtained in Norfolk Harbor on 25 January 1983, is included in this report. No velocity corrections or settlement and squat determinations were actually conducted within or during this project.

The pre-survey depth data for these items, AWOIS No. 02729 protruding 9.5 feet off the bottom in 131 feet of water and AWOIS No. 02730 protruding 8.0 feet in 136 feet of water, indicated that diving operations were prohibitive due to excessive depth.

F. Control Stations

The soundings recorded were apparently not plotted by the field and no automated tapes of these soundings were submitted, therefore no plot of these soundings is available. The soundings collected are of reconnaissance value only and not intended for charting.

Two electronic control stations were used for this survey. Staion 01 was established at an elevation of 28.6 meters on FALKNER ISLAND LIGHTHOUSE (1882), latitude 41°-12'-42.701"N., longitude 072°-39'-14.608"W. Station 02 was located at SAYBROOK LIGHTHOUSE (1861), with an elevation of 21.6 meters at latitude 41°-16'-16.894"N., longitude 072°-20'-37.01?"W. These NGS monumented stations are Third-Order, Class I control accuracy. The station positions are based upon the North American Datum of 1927.

G. Calibration and Positionins Control

Vessel positionins for all work was accomplished with the Del Norte 520 series electronic positionins equipment operated at a freqUency of 9400 MHz in the range-range mode. A listins of DMU and master units used by the vessels durins this survey are listed by Julian day in Appendix A. The remote installed at Station 01 was code 74 , serial number 3003. Remote code, 76, serial number 3004 was installed at Station 02.

Two baseline calibrations were performed durins this survey. All baseline calibrations were conducted in the immediate work area and entirely over water in accordance with AMC OPORDER 79. Baseline calibration distances were determined by the HP 3800A electronic distance measurins instrument, serial number 0987A00157. The followins is a list of the baseline calibrations, as measured by the HP 3800A:

27 July, 1983 JD 208	Belle Terre Beach to Port Jefferson W. Jetty Lt.	2601.1 m
27 August, 1983 JD 239	Belle Terre Beach to Port Jefferson W. Jetty Lt.	2601.1 m

The openins and closins calibrations for this one day operation were conducted usins 3-point sextant fixes with check angles as follows: left object 14, KELSEY POINT BREAKWATER LT. (1934); center object 13, DUCK IS. WEST BREAKWATER LT. (1934); right object 16, LIBBY'S CHIMMEY (1934); and check object 12, DUCK IS. NORTH BREAKWATER LT. (1934). These objects are fully described in Appendix D. The daily mean corrector was within accuracy tolerances for a survey of this scale. Therefore, only the baseline calibration data should be applied to the raw position data durins final processins. See Appendix A. for daily and baseline calibration data.

H. Dates of Survey

This survey was carried out on 24 August, 1983, JD 236.

I. Reduction and Processins of Data

The data collected durins ship wire dras operations was manually entered in the wire dras volumes while on line. The position data was also entered into the Disital PDP 11/34 computer while on line.The prosram used was the R/H Double Precision Wire Dras prosram (1983). The dras strips were then smooth plotted with the Houston Instrument roll-bed plotter. Effective depths from the reduced data were then drawn on the dras strips. The dras strip data for strips 01 and 03 was then applied to the smooth field sheets R/H 20-11B-83 and R/H 20-11C-83.

Test data was applied to the drass in a method which differs slishtly from the Wire- Dras Manual. This method has been used aboard the dras boats for the past several years and was a more conservative method. When an upright was lowered, the deeper

drag depth was not claimed until the time of the first test at that depth. When an upright was raised, the drag depth from the previous test, after the raising of the upright, was applied to the time when the upright was raised. If the amount of lift increased during a drag, when uprights remained unchanged, this decreased drag depth was applied back to a time halfway between the time of the greater lift. Predicted tide correctors were then applied to the drag depths obtained from the application of the test data. The predicted tide correctors were generated onboard the Rude with the ship's Digital PDP 11/34 computer and predicted tide tapes for 1983. These tide tapes were supplied to the ships by MOA 231. Hardcopy printouts of the predicted tide correctors used during this survey are included in the data files. No upright changes were made during this survey. Lifts were recomputed during verification in accordance with the Wire Drag Manual. Lifts and tide correctors were applied to the wire drag strips in accordance with the Wire Drag Manual during verification.

J. Junction and Splits — See section 5. of the Evaluation Report.

These wire drag surveys were item investigations with no junctions required.

K. Comparison with Prior Survey - See section 6.a. & 6.b. of the Evaluation Report.

Effective depths from the ship wire drag surveys were compared with the prior survey H-9181 (1970). This comparison was made using the prior survey of H-9181 (1970), which was included in the project instructions, at a scale of 1:20,000. The field sheets R/H 20-11B-83 and R/H 20-11C-83 were plotted at a scale of 1:20,000 and overlayed on the prior survey with direct comparison made. The charted soundings of H-9181 (1970) were greater than the effective depths of drag strip JD 236-01 and JD 236-03 and ranged from 79 feet to 173 feet in the common areas surveyed.

Soundings from field sheet R/H 20-11A-83 were also compared with the prior survey of H-9181. Only a crude comparison of soundings could be made with H-9181 since no velocity correctors were determined. Five soundings which differ with the prior survey are:

As previously stated in section E. of this report, no field plot of the hydrography was included in the field records.

Location	Surveyed Depth	Prior Survey Depth
λ 41-10-15.0N φ 072-26-37.8W	119 feet	129 feet
λ 41-10-37.2N φ 072-25-50.4W	114 "	118 "
λ 41-10-50.8N φ 072-25-23.4W	109 "	117 "
λ 41-11-06.0N φ 072-24-59.4W	77 "	69 "
λ 41-11-09.0N φ 072-24-53.4W	77 "	73 "

Differences noted were in the area of sand wave bottom topography. Sand waves are dynamic in nature and change with each

storm cycle. Thus with each storm cycle, the soundings would change in the sand wave area. – Concur

L. Comparison with Chart – See section 7.a. of the Evaluation Report.

The area surveyed is covered by (2) two NOS charts: 12354 25th Ed., July 31/82 and 12358 14th Ed., July 10/82. Landmarks inshore of the area wire drassed were visually verified from offshore and ~~are~~ remain suitable for chartins. charted

A number of floatins aids were charted in the vicinity of the area surveyed. For the surveyed positions of the floatins aids to navisation, see Descriptive Report to Accompany Hydrosraphic Survey RU/HE-20-13-83. ← included in this survey – FE-257WD

The positions of AWOIS No.02729 and 02730 are in asreement with the SUMMARY of CORRECTIONS, CHARTS OCTOBER 1983-VOLUME 1, EAST COAST OF NORTH AND SOUTH AMERICA (SUBREGIONS 11 THRU 15 AND 23 THRU 28), Subresion 12 pase 12-91 for chart 12354.
No conflicts exist between charted hydrography and present effective depths.

M. Adequacy of Survey

This survey completely covers AWOIS No. 02729 and AWOIS No. 02730. The depth of the contacts prohibited divins operations on these unidentified contacts. At the time of the survey sufficent upright wire was not available to hans contacts at the depths indicated in the AWOIS descriptions.

However, effective depths sreater than 70 feet have been cleared in one direction over the two positions in accordance with the project instructions for OPR-B660-RU/HE-83 and the Survey Requirements for AWOIS items No. 02729 and No. 02730 (20 July, 1983).

Descriptive Report to Accompany Hydrosraphic Survey RU/HE 20-13-83 covered the same area as AWOIS No. 02729 and field sheet R/H -20-11B-83.
As a result of these combined field sheets (R/H-20-11-83 & R/H-20-13-83(4)) AWOIS Item 2729 has been cleared in two directions to a minimum depth of 73 feet. AWOIS Item 2730 remains cleared in only one direction. See sections 4. & 7. of the Evaluation Report.

N. Incomplete Items

There were no incomplete items left on this survey.

O. Currents and Winds

In seneral, the surface and bottom tidal currents appeared to exhibit the same seneral characteristics and trends as observed in the vicinity of the Northville Oil Terminal. A complete description of these conditions is available in the Descriptive Report to Accompany Hydrosraphic Survey R/H 05-01/03-83 and R/H 10-02-83.

P. Personnel

The officers participatins in this survey were LCDR Donald D. Winter, LT Neal G. Millett, LT Edward M. Clark and ENS Thomas G. Callahan.

Q. General Notes

See the Coast Pilot Report and the Loran-C comparisons for OPR-B660-RU/HE-83 and the Descriptive Report for OPR-B660-RU/HE-82 for additional information on this survey.

The format of this report is a composite of the Descriptive Report formats contained in the Wire Dras and Hydrographic Manuals. This format is the optimum composite of the pertinent sections of the two reports and is more applicable to the surveys currently being conducted by the Rude and Heck. Concur

Respectively submitted,

Edward M Clark

Edward M. Clark, LT, NOAA

APPROVAL SHEET

R/H 20-11-83

Field operations contributing to the accomplishemnt of this survey were conducted under my supervision with frequent personal checks of progress and adequacy. This report and field sheets have been closely reviewed and are considered complete and adequate for charting.

Donald D. Winter
LCDR, NOAA
Commanding Officer
NOAA Ships RUDE & HECK

C. HORIZONTAL CONTROL

No new stations were established for this survey. See Appendix D., Signal List for a complete listing of all stations used on this survey

D. SIGNAL LIST

See Appendix D. in the following Report - R/H-20-13-83/84

E. PNEUMOFATHOMETER CALIBRATIONS

No pneumofathometer calibrations were required for the survey of AWOIS No. 02729 and No. 02730.

F. DIVING REPORTS

Diving operations for AWOIS No. 02729 and No. 02730 were not conducted due to excessive depth.

H. LOCAL NOTICE TO MARINERS REPORT

Negative Report

J. DANGER TO NAVIGATION REPORT

See Appendix H.

NOAA FORM 77-28 (11-72)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

HYDROGRAPHIC TITLE SHEET

REGISTER NO.

FE-257 WD

INSTRUCTIONS - The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

FIELD NO.

R/H 20-13-83/84

State NEW YORK

General locality LONG ISLAND SOUND

Locality Southeast of Sixmile Reef ~~CORRIDOR POINT 7 TO LONGITUDE 072-20-00 W~~

Scale 1:20,000 Date of survey 15 SEPT. 83 - 29 OCT. 84

Instructions dated ~~22 JULY~~ 17 June 1983 & 12 APRIL 1984 Project No. OPR-B660-RU/HE-83/84

Vessel NOAA SHIPS RUDE (9040) and HECK (9140)

Chief of party LCDR ROBERT K. NORRIS

Surveyed by LCDR R.K. NORRIS, LCDR D.D. WINTER, LT N.G. MILLETT, LT E.M. CLARK, LT J.C. TALBOTT, LTJG T.G. CALLAHAN

Soundings taken by echo sounder, ~~hand lead, pole~~ RAYTHEON DSF 6000N S/Ns A116N and B051N
RAYTHEON DE-719B S/Ns 5799 and 6212, Side Scan Sonar, and Wire Drag

Graphic record scaled by T.G.C., E.M.C., W.J.A.

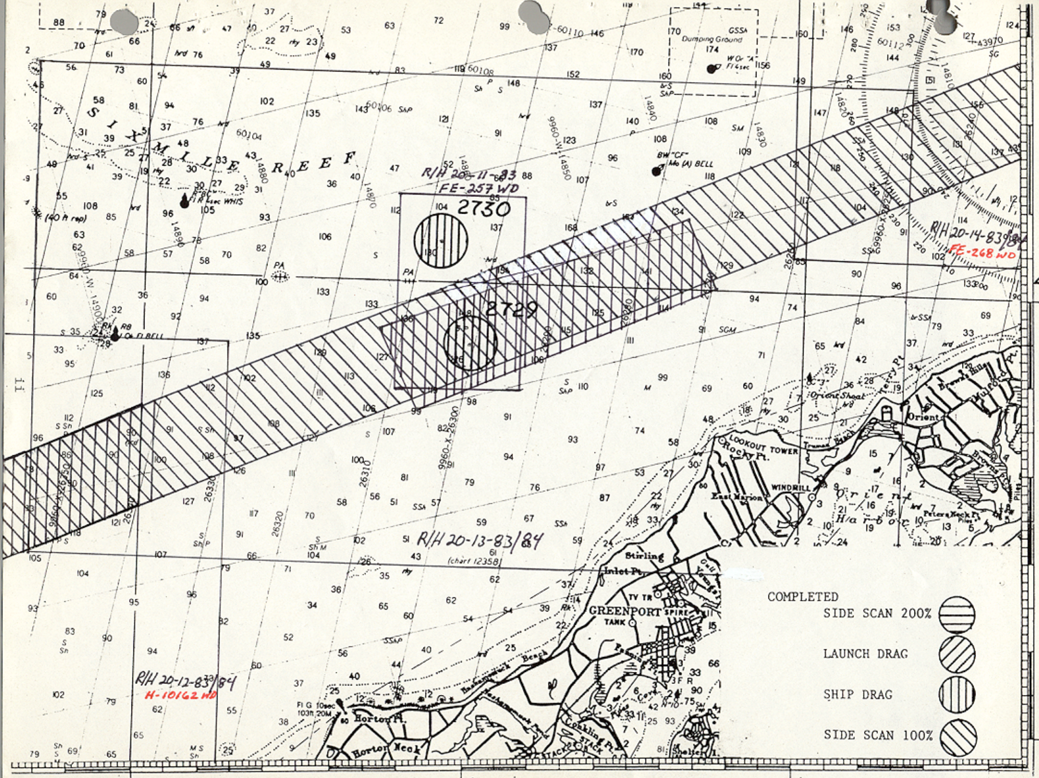
Graphic record checked by R.K.N., D.D.W., N.G.M., E.M.C., T.G.C., W.J.A.

Protracted by N/A Automated plot by N/A

Verification by Hydrographic Surveys Branch, Evaluation and Analysis Group, A.M.C.

Soundings in ~~fathoms~~ feet at ~~MLW~~ MLLW ~~CORRECTED FOR PREDICTED TIDES.~~ Smooth Tides Applied

REMARKS: All times are recorded in UTC. See FE-257WD, Coast Pilot Report for OPR-B660-RU/HE-83/84, Loran-C Comparison Data for OPR-B660-RU/HE-83/84, and the Horizontal Control Report for OPR-B660-RU/HE-84 for additional information on this survey.



SIX MILE REEF
R/H 20-11-83
FE-257 WD
2730
2729
R/H 20-14-83/84
FE-268 WD
R/H 20-13-83/84
(chart 12358)
R/H 20-12-83/84
H-10162 WD
GSSA
Dumping Ground
BW "CF"
Mo (A) BELL
Orient Shoal
Orient Pt.
Terry Pt.
LOOKOUT TOWER
Rocky Pt.
East Marion
WINDMILL
Orient Harbor
Stirling
Inlet Pt.
GREENPORT
TV TR
SPIRE
TANK
Horton Pt.
Horton Neck
Conkling Pt.
STACK
Hashamomuck Beach
Fl G 10sec
103ft 20M
COMPLETED
SIDE SCAN 200%
LAUNCH DRAG
SHIP DRAG
SIDE SCAN 100%
72°30′
25′
20′
41

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* = Data removed from the Descriptive Report and filed with the field records.

DESCRIPTIVE REPORT TO ACCOMPANY
HYDROGRAPHIC SURVEY
~~X~~FE-257WD (FIELD NO. R/H 20-13-83/84)
SCALE 1:20,000
1983/84
NOAA SHIPS RUDE & HECK
LCDR ROBERT K. NORRIS, COMDG.

A. Project Authority

This project was conducted during a two year period in accordance with Hydrographic Project Instructions OPR-B660-RU/HE-84 and OPR-B660-RU/HE-83, Southern New England Coast. The 1984 instructions are dated April 12, 1984, with two ammendments to these instructions, change No. 1 dated May 21, 1984 and change No. 2 dated Nov. 30, 1984. The 1984 instructions supersede the previous instructions issued for OPR-B660-RU/HE-83, dated 17 June 1983, with two changes to those instructions, dated 22 July and 8 December, 1983. The purpose of this project is to provide wire drag and side scan sonar clearance of the Northville Industries Corporation oil tanker route, to provide clearance depths over selected wreck sites, and to verify or disprove certain reported submerged wrecks along the south coast of New England.

B. Characteristics and Limits of Area Surveyed

H-10162WD

This report contains that area of the one mile wide tanker route, which junctions with R/H 20-12-83/84 to the west at corridor point 7, longitude 072°-30'-00" W, and to the east with survey R/H 20-14-83/84 at longitude 072°-20'-00"W. The survey work consisted of an initial side scan sonar investigation of the corridor with 100-percent coverage of the bottom, which was conducted in 1983. 1984 operations consisted of a wire drag survey of AWOIS item 2729 and the boulder field contained within the tanker corridor. The drag extends 4.2 lineal nautical miles from southwest at longitude 072°-26'-~~28~~14" W to northeast at longitude 072°-21'-~~33~~25" W. This wire drag completed the opposing drag requirement for AWOIS item 2729 from FE-257WD (1983). The data has been combined - See the Evaluation Report.

FE-268WD → corridor

(one strip, strip B-1) → survey

C. Survey Vessels

The NOAA Ships RUDE (vesno 9040) and HECK (vesno 9140) were the only two vessels used in this survey. Both ships were used for the side scan sonar coverage and the wire drag operations.

D. Hydrographic Sheets

The hydrographic sheets used in this survey were made of mylar and were constructed with the Digital PDP 11/34 computer, serial number AG22645 and Houston Instruments roll-bed plotter, serial number 8731-8 aboard the Ship RUDE.

The field sheets and boat sheets were plotted at a scale of 1:20,000 and were used aboard each vessel to hand plot the towing vessel's position while on line. A smooth sheet was also plotted aboard the ship using the same equipment as described above. This smooth sheet was used to machine plot the towing vessel's position, to hand plot any targets or large contacts, to delineate the limits of rocky or boulder areas, and to illustrate the area covered by side scan sonar operations.

The two A & D (area and depth) sheets were hand plotted at a scale of 1:20,000 and depict the wire drags for each year. Drag strips 01 and 03 for JD 236 of 1983 were forwarded to the Atlantic Marine Center with survey R/H 20-11-83, FE-257WD. The drags were hand plotted to provide reference for desired opposing drags of the AWOIS items 2729 and 2730. It was also necessary to hand plot the A & D sheet containing the drag strip 01 of JD 299 of 1984. The Del Norte ranges from the electronic control stations exceeded the limits allowable for the wire drag programs. The drag data could not be machine plotted using the standard R/H Double Precision W/D Programs.

The remaining field records for this survey are being sent to the Atlantic Marine Center for future reference or verification and smooth plotting.

The computer plotted Lattice on the boatsheet for NEW LONDON LEDGE LIGHTHOUSE, 1932 is in error causing the strip to plot in a slightly different position than planned by the field. However the corrected strip achieves the intended objectives.

E. Equipment and Techniques

The ship wire drag work was performed using standard wire drag equipment and techniques. The drags were tested from the ships' Sisu launches.

All side scan sonar coverage was accomplished with the Klein side scan sonar systems. Two Klein systems were provided by the Atlantic Marine Center. Each system consisted of a Model 521 recorder, a 100 KHz towfish, a K-Wing depressor and a towcable. The Model 521 recorder used aboard the HECK, serial number 223, had initial and maximum gain control with numerical settings. This allowed for annotating of the sonargram at the start of the day and annotating any change in the settings that occurred during the day. The recorder aboard the RUDE, serial number 088, did not have numerical settings on the gain control knobs. The sonargrams from this recorder were only annotated with the relative changes that were made to the gain settings during the day's operations.

The recorder 088 also did not have as many paper take-up rollers as did recorder 223. This caused the sonargram record produced by recorder 088 to contain numerous paper pull stretch marks. These stretch marks appeared as diagonal traces from the outer edge of the paper towards the center, as the paper came off the helix drum. All the sonargrams from this recorder were annotated as to this fact to avoid confusing these stretch marks with sand waves.

Del Norte rates obtained on fixes were recorded with Eaton Model 7000+ serial printers during this survey. These printers worked fairly well considering the fact that they were not designed to be operated in a marine environment. The printers would often type out a line of meaningless characters or rates from the previous fix before the current fix was recorded. The

printer records were annotated such that these meaningless characters and extraneous rates were lined out leaving the correct fix rates clearly displayed.

In accordance with the 1983 Project Instructions Change No. 2, a method was developed and utilized running nine equally spaced tracklines along the length of the corridor at the 200 meter range scale. This method provided complete and adequate coverage of the corridor, at 100% coverage.

A Raytheon model DE-719B echo sounder was operated and annotated concurrently during all 1983 side scan sonar and wire drag operations. Unit S/N 5799 was operated aboard the RUDE and unit S/N 6212 was used aboard the HECK during this survey. The echo sounder recordings were reviewed daily to ensure that no large objects located directly under the sonar towfish may have been undetected. A DSF 6000N echo sounder was operated aboard both towing vessels during 1984 wire drag operations. Unit S/N B051N was used aboard the RUDE and the unit S/N A116N was operated on the HECK.

Although it is not anticipated that these sounding records will be used for charting purposes, the settlement and squat data for the RUDE and HECK, obtained in Norfolk Harbor on 25 January 1983, is included in this report. No velocity corrections or settlement and squat determinations were actually conducted within or during this project. The draft of the transducers on both vessels is 7.0 feet.

The soundings recorded were apperently not plotted by the field and no automated tapes of these soundings were submitted therefore no plot of these soundings is available. The soundings collected are of reconnaissance value only and not intended for charting.

F. Control Stations

Three electronic control stations were used for this section of the survey. These stations were:

Station Name	Latitude & Longitude	Elev.
FALKNER ISLAND LIGHTHOUSE (1882)	41°-12'-42.701" N 072°-39'-14-608" W	28.6 m
NEW LONDON LEDGE LIGHTHOUSE (1932)	41°-18'-20.792" N 072°-04'-40.512" W	17.7 m
SAYBROOK LIGHTHOUSE (1861)	41°-16'-16.894" N 072°-20'-37.019" W	21.6 m

These stations were located by NGS and the adjusted positions for these stations were obtained from published NGS horizontal control data. All stations are of Third-Order, Class I control accuracy or better. The station positions are based upon the North American Datum of 1927.

The 1983 control for side scan sonar work was accomplished using FALKNER ISLAND LIGHTHOUSE as Sta. 01 and SAYBROOK LIGHTHOUSE as Sta. 02. SAYBROOK LIGHTHOUSE, Sta. 01, and NEW LONDON LEDGE LIGHTHOUSE, Sta. 02, were used in 1983 for control in positioning Cornfield Lighted Bell Buoy "CF" and Cornfield Shoals Dumping Ground Lighted Buoy "A". The 1984 wire drag survey used control at SAYBROOK LIGHTHOUSE, Sta. 01, and Sta. 02 at NEW LONDON LEDGE LIGHTHOUSE.

G. Calibration and Position Control

Vessel positioning for all work was accomplished with the Del Norte 520 series electronic positioning equipment operated at a frequency of 9400 MHz in the range-range mode. A listing of DMU and master units used by the vessels during this survey are listed by Julian day in Appendix A for the 1983 work and in the Supplemental Appendix A for the 1984 operations. During 1983, remote unit 74, S/N 3003, was installed at FALKNER ISLAND LIGHTHOUSE and later at NEW LONDON LEDGE LIGHTHOUSE. The remote installed for the 1983 survey at SAYBROOK LIGHTHOUSE was unit 76, S/N 3004. The remote units were changed to 80 series coding in 1984.The change was necessary due to other users operating Del Norte 520 equipment with 70 series coding concurrently during the 1984 wire drag survey. Remote unit 84, S/N 3033, was operated at SAYBROOK LIGHTHOUSE and the unit coded 86, S/N 3004, was installed at NEW LONDON LEDGE LIGHTHOUSE.

A total of five baseline calibrations were performed during this survey. All baseline calibrations were conducted in the immediate work area and entirely over water in accordance with AMC OPORDER 79. Baseline calibration distances were determined by the HP 3800A electronic distance measuring instrument, serial number 0987A00157. The following is a list of the baseline calibrations, as measured by the HP 3800A:

27 August, 1983	Belle Terre Beach to Port Jefferson W. Jetty Lt.	2601.1 m
30 October, 1983	New London NUSC Pier 4S to S. Groton Jetty	2312.0 m
15 November, 1983	New London NUSC Pier 4S to S. Groton Jetty.	2312.0 m
28 September, 1984	Newport Naval Pier 2 to Gould Island SE Pier	1933.2 m
29 October, 1984	New London NUSC Pier 4S to S. Groton Jetty	2312.0 m

Daily calibrations in 1983 were accomplished using the fixed point calibration method in accordance with Hydrographic Manual section 4.4.3.3. KELSEY POINT BREAKWATER LIGHT(1934) was the fixed point used during this survey. All ship calibration was accomplished by carrying out the calibration to the ship via a launch equipped with Del Norte.

The launch pulled as close alongside the breakwater light as possible. The Del Norte equipment was then calibrated, the offset applied, and the correctors determined. This calibrated launch then pulled alongside the ship, as close to the ship's Del Norte antenna as was safely possible. Rates were then compared, offsets applied, and a second set of correctors generated. These two sets of correctors, between the launch and the light and between the launch and the ship, were then added together and the ship's calibration correctors determined.

Not an acceptable method of calibration, see the Evaluation Report.

The HECK open calibrated in this manner on JD 258 of 1983. The calibration correctors obtained between the launch and the light and between the launch and the ship were combined and entered in Sounding Volume 1. There was no closing calibration on this day due to darkness.

The calibration data from JD's 277 and 278 of 1983 is contained in Appendix A, of this report. The RUDE open and close calibrated on JD 277 with no difficulties. On JD 278 the RUDE and HECK open calibrated but were unable to close calibrate due to high winds and seas. These conditions prevented putting a launch over the side without endangering personnel.

The calibration data for 1984 consists only of JD 299. The opening and closing calibrations were conducted using three point sextant fix procedures in the vicinity of Sarah Ledge, west of the entrance to the New London Harbor Channel of the Thames River.

The daily correctors for all calibrations were stable and within accuracy tolerances for a survey of this scale. Therefore, only baseline calibration data should be applied to the raw position data during final processing and smooth plotting. - Concur

H. Dates of Survey

This survey period for 1983 was begun on 15 September, (JD 258) and was completed on 3 November, (JD 307). The only operation conducted in 1984 for this survey was the wire drag on 25 October, (JD 299).

I. Reduction and Processing of Data

Data collected during ship drag operations for 1984 was manually entered in the wire drag volumes while on line. The position data was also entered in the Digital PDP 11/34 computer while on line. The programs used were the R/H Double Precision Wire Drag programs. However, these programs were unable to machine plot the drag strip data. Review of the Del Norte ranges from the electronic control station indicated that the rates exceeded the limits for this program. The positions were then hand plotted on the A & D sheet for JD 299. The effective depths from the reduced data were then drawn on the drag strip in colored pencil.

Test data was applied to the drag in a manner which differs slightly from the Wire-Drag Manual. This method has been used aboard the drag boats for the past several years and is a more conservative method. If the amount of lift increased during a drag when uprights remained unchanged, this decreased drag depth was applied back to a time halfway between the time of the earlier test with less lift and time of the later test with the greater lift. - Lifts were recomputed during verification and were applied in accordance with the Wire Drag Manual.

Predicted tide correctors were then applied to the drag depths obtained. The predicted tide data applied to the 1984 wire drag section of this survey was obtained from correctors based on latitude 41°-10'-00" N and longitude 072°-28'-00" W. These are correctors for the AWOIS item originally numbered # 1814, which

This is not in accordance with accepted practices. During verification changes were applied in accordance with the Wire Drag Manual.

was renumbered (July 20, 1983) AWOIS No. 2729. The predicted tide correctors were generated onboard the RUDE with the ships' Digital PDP 11/34 computer and predicted tide tapes for 1984. These tide tapes were supplied to the ships by MOA 231. Hardcopy printouts of the predicted tide correctors used during the 1984 wire drag survey operations are included in the data files.

The changes in effective depth that occurred during the drag were applied at the exact time of the change. The fix interval for the drag work was five minutes, therefore some changes in effective depth occurred between fixes. When this occurred the time was interpolated and drawn in appropriately.

All side scan sonar data was initially recorded in NOAA Form 77-44, Sounding Volumes. All header data, position numbers, time, and position control data were recorded in the appropriate columns in the volumes. The remarks column was used to record all line information, vessel rpms, length of towcable, vessel heading, and any other unusual or noteworthy remarks.

Vessel position data from the side scan sonar work was entered in the Digital PDP 11/34 computer with a modified version of the R/H Double Precision Wire-Drag program. Rates for just one vessel were entered in this program and a single vessel position plot was generated with the Houston Instruments roll-bed plotter. All side scan sonar work for this survey was plotted in this manner.

Side scan sonar coverage was computed and listed on the Side Scan Sonar Coverage Abstract. The required 100% side scan sonar coverage was obtained throughout the corridor, with the exception of the area between fixes 1110-1113 and 1538-1535 (smooth sheet numbers 110-113 and 538-535). This area was swept in 1983 by wire drag on JD 236, strip 01, to a depth of 76' and 75' feet. An additional wire drag was conducted in 1984 on JD 299, and strip 01 cleared the same area in the opposing direction. This clearance depth was computed using predicted tides and is fully documented in the Descriptive Report accompanying contemporary survey R/H 20-11-83 (FE-257WD).

The sonargrams from the side scan sonar work were examined while on line and then again at the end of the day. All notable contacts were flagged during each examination. These flagged contacts were then logged in the Side Scan Sonar Target Abstract for that field sheet. The Target Abstract was then completed and the contacts were plotted on the smooth sheet containing the vessel position plots. The Side Scan Sonar Target Lists were then compiled from the Target Abstracts and the contact plots. The Del Norte rates of the contact positions were determined using a grid and arc overlay. These rates were then used to determine the latitude and longitude of the contact with the HP 9815 computer and the Geodetic Package program.

The towfish length indicated in the sounding volume and on all sonargrams is actually the length of towcable from the waterline to towfish. During the plotting of the contacts on the smooth sheet, the towfish layback was computed by adding the length of towcable from the waterline to the towfish plus the antenna to waterline distance (17.98m).

The computation of the towfish layback is not an exact determination of the layback but is an adequate method of plotting contacts. It is realized that there are two minor errors in using the length of towcable out the stern as a measurement. First the towfish is not directly astern of the towing vessel. Secondly, the actual horizontal component is less than the entire length of towcable deployed due to the depressing effect of the K-Wing on the towfish. This amount of error is insignificant when plotted at a scale of 1:20,000. There was good agreement between the plots of the same contact as observed on adjacent lines run in opposite directions.

J. Junctions and Splits — *Also see section 5. of the Evaluation Report.*

H-10162 WD

This side scan sonar survey junctions with contemporary survey R/H 20-12-83/84 to the west and with contemporary survey FE-268WD → R/H 20-14-83/84 to the east. There is adequate overlap with these contemporary surveys. — *Concur*

Contemporary survey R/H 20-11-83 (FE-257WD) which investigates AWOIS items 2729 and 2730, was contained in the work area. Both of these drags were hand plotted on the A & D sheet for 1983. AWOIS item 2729 was cleared in 1983 by a wire drag to 75 feet and in one direction, from northeast to southwest. This drag strip, JD 236-01, effectively clears the area not covered by 100% side scan sonar search. The 1984 wire drag operations are depicted by the hand plot of drag strip JD 299-01. This drag was conducted from southwest to northeast and clears the 1983 drag of AWOIS item 2729 in the opposing direction with an effective depth of 73 feet. — *R/H-20-11-83 was combined with R/H-20-13-83/84 into FE-257 WD.*

K. Comparison with Prior Surveys — *Also see Sections 6a. & 6.b. of the Evaluation Report.*

The side scan sonar and wire drag records were compared with prior surveys H-9089 (1969) and H-9181 (1970-71). The boulder field centered around 41°-10'-00" N, 072°-23'-00" W was identified as a prominent feature which was not indicated on the prior survey.

The section of the boulder field noted as target number 12 on the Target List appears to be a field of small rocks and, according to prior survey H-9181 (1970-71), occurs in over 100 feet of water.

Selected soundings obtained on the peaks of sand waves during side scan sonar operations with the Raytheon DE-719B fathometer are listed in Appendix O. These soundings are corrected for draft, settlement and squat, and predicted tides. The predicted tide correctors used are those for AWOIS item 2729 at latitude 41°-00'-00" N, longitude 072°-28'-00" W. These soundings are applied to the smooth field sheet and compared with the prior survey H-9181. In the areas of sand waves, soundings obtained by this survey are 2-10 feet shoaler than those on the prior survey.

These shoaler soundings may be due, in part, to differences between actual and predicted tide correctors. There is also the possibility that some shoaling has occurred in the area of sand waves since sand wave bottom topography is very dynamic in nature and changes with each storm cycle. — *Concur*

These soundings are not plotted on the final field sheet.

L. Comparison With the Chart—See the Evaluation Report, section 7.a.

The chart that covers the work area is NOS chart 12354, 26th Ed., Feb. 4/84. When comparing soundings found on the above chart with prior surveys H-9089 and H-9181, two soundings were charted which did not agree with the prior survey. These two charted soundings were:

Prior Survey	Latitude	Longitude	Survey Depth	Charted Depth
H-9181	41°-08'-09"N	072°-28'-30"W	110 feet	97 feet
H-9181	41°-08'-48"N	072°-28'-24"W	113 feet	102 feet

These two soundings are beyond the survey limits of H-9181 and originate with prior survey H-1591 (1883).
It is recommended that the prior survey be researched to find out the origin of these charted soundings.

Regarding non-sounding features, the following charting recommendations are offered:

1. Chart "Blds" at :
   - 41°-10'-04"N, 072°-23'-07"W } Concur
   - 41°-09'-48"N, 072°-22'-45"W
2. Chart "rky" at :
   - 41°-11'-10.1"N, 072°-18'-51.8"W } Concur
3. Chart a sand wave symbol, " ∿ " at : and/or the notation "Large migrating sand waves"
   - 41°-08'-48"N, 072°-27'-54"W
   - 41°-08'-42"N, 072°-26'-48"W
   - 41°-09'-35"N, 072°-26'-15"W
   - 41°-09'-48"N, 072°-24'-45"W
   - 41°-10'-50"N, 072°-20'-20"W
   - 41°-11'-36"N, 072°-19'-18"W
   - 41°-11'-20"N, 072°-18'-48"W. } Concur

All floating aids to navigation were checked during the course of this survey. Cornfield Lighted Bell Buoy "CF" is contained in and plotted on the smooth (field) sheet. This plotted position agrees with the buoy position given in the Light List and with the charted position on NOS chart 12354, 26th Ed., Feb. 4/84.

Cornfield Shoals Dumping Ground Lighted Buoy "A" is not contained on this sheet but was positioned during and with control from this survey. The position obtained by this survey for this buoy is λ41°-12'-33.0"N, φ 072°-21'-16.5"W. This plots the buoy 0.2NM east of the position that appears in the Light List and the position from NOS chart 12354, 26th Ed., Feb. 4/84. This private aid was changed during the 1984 season to CORNFIELD SHOALS DUMPING GROUND LIGHTED BUOY "DG1". It is recommended that the U.S. Coast Guard be contacted for confirmation and additional information on this aid.

Sixmile Reef Lighted Whistle Buoy "8C" and Twenty-Eight Foot Shoal Lighted Bell Buoy "TE" are contained within the limits of this smooth sheet but were positioned during contemporary survey R/H 20-12-83/84. The positions of these buoys were checked and confirmed during survey R/H 20-12-83/84 and are not plotted on sheet R/H 20-13-83/84.

All (charted) landmarks in the proximity of this survey were visually verified from offshore and ~~are~~ (remain) adequate for charting.

M. Adequacy of Survey

With the exception of the area mentioned in section I., 100% side scan sonar coverage was achieved in the section of the tanker corridor contained within the limits of this sheet. This area, lacking 100% sonar coverage, was cleared during wire drag operations in 1983 and 1984 and is addressed in section I. The 1984 wire drag work also ~~completely~~ cleared the majority of the boulder field centered about latitude 41°-10'-00" N and longitude 072°-23'-00" W with a minimum effective depth of 73 feet. Therefore, this survey adequately covers the tanker corridor, contained within the limits of this sheet, by side scan sonar and wire drag operations. See section N. of this report for additional survey operation recommendations.

Time constraints during the 1983 field season precluded the investigation of any side scan sonar contacts in the tanker corridor which were not cleared by the wire drag operations for AWOIS item 2729. The boulder field, centered around 41°-10'-00"N, 072°-23'-00"W contained many significant contacts within the tanker corridor. This area was cleared by a wire drag strip 01 on JD 299 of 1984 to insure that no hazards to navigation exist within this boulder field.

Review of the 1983 Target List indicated the contacts labeled 11a, 37, 38b had computed heights of nearly 10 feet and occur in 114 feet of water. These targets could possibly constitute a hazard to deep draft traffic and require additional wire drag investigation, which was conducted in 1984. The targets lying adjacent to the boulder field mentioned above were also cleared by wire drag survey on JD 299 of 1984. This drag cleared all of these recommended contacts and the majority of the corridor between longitudes 072°-21'-35"W to 072°-26'-30"W with a minimum effective depth of 73 feet in one direction from southwest to northeast. - These contacts have computed depths of over 100 feet and do not constitute a hazard to surface navigation and therefore do not warrant charting.

The Target labeled 12, a boulder field, does not contain any significant contacts and occurs in over 100 feet of water. Therefore, it does not constitute a hazard to deep draft vessels. It is not recommended that Target 12 require clearance by wire drag survey or any further investigation. - This target was cleared by wire drag on junctional survey FE-268 WD

With the exception of the targets mentioned above, the Side Scan Sonar Target List does not indicate that any other contacts observed during this survey exceed a height greater than 10% of the charted depth. Any further investigation of these targets, other than those mentioned above, is not recommended at this time. - Concur

AWOIS item 2729 was cleared to 75 feet in 1983 and to a minimum effective depth of 73 feet in 1984 in the opposite direction by the drag on JD 299.

N. Incomplete Items

The Command feels that sufficient development of the survey area was achieved by side scan sonar, wire drag or by the combination of these operations. The survey has satisfied the intent of the project instructions and, in this respect, has no incomplete items. - Concur

O. Hangs and Groundings

No hangs or groundings were encountered during the wire drag operations.

P. Currents and Winds

Tidal currents were closely monitored during the course of this survey. Ship drag operations had to be run with the predominate current flow to result in satisfactory lift data. Side scan sonar operations were also conducted with the predominate current flow to maintain proper towfish depth. Comparisons were made with the Tidal Current Tables, 1983/84, Atlantic Coast of North America for station 2731. In general, the times and strengths of maximum flood and ebb or times of slack water at the surface agreed with the predicted times and strengths under normal conditions.

In general, the surface and bottom tidal currents appeared to exhibit the same general characteristics and trends as the nearshore areas. A complete description of these conditions are available in the Descriptive Report for survey R/H 05-01-83/84, R/H 05-03-83/84, and R/H 10-02-83.

Q. Personnel

The officers participating in this survey were LCDR Robert K.Norris, LCDR Donald D. Winter, LT Neal G. Millett, LT Edward M. Clark, LT Joseph C. Talbott, and LTJG Thomas G. Callahan.

R. General Notes

See the Coast Pilot Report and Loran-C comparisons for OPR-B660-RU/HE-83, Descriptive Report for AWOIS Item 2729 (R/H 20-11-83) ← part of this survey's Descriptive Report, Horizontal Control Report for OPR-B660-RU/HE-84, and the Descriptive Report for OPR-B660-RU/HE-82 for additional information on this survey.

The format of this report is a composite of the Descriptive Report formats contained in the Wire Drag and Hydrographic Manuals. This format is the optimum composite of the pertinent sections of the two reports and is more applicable to the surveys currently being conducted by the Rude and Heck.

Charting recommendations for this survey are contained in section L. of this report.

Survey R/H 20-11-83 (FE-257WD) should be reviewed with the additional wire drag data clearing AWOIS item 2729 from this survey. — R/H-20-11-83 & R/H-20-13-83/84 have been combined into one survey — FE-257WD

Respectfully submitted,

Edward M Clark

Edward M. Clark Jr, LT. NOAA

S. Approval Sheet

Field operations contributing to the accomplishment of this survey were conducted under my supervision with frequent personal checks of progress and adequacy. The report and the associated field sheets have been closely reviewed and the completed work is considered adequate.

Robert K. Norris, LCDR, NOAA

Robert K. Norris

Commanding Officer
NOAA Ships RUDE and HECK

C. HORIZONTAL CONTROL

No new stations were established for this survey. See Appendix D, Signal List, for a complete listing of all stations used on this survey.

D. SIGNAL LIST

Appendix D

OPR-B660-Ru/He-83 — R/H-20-11-83

See the Automated Control File Listing following these lists.

Saybrook Lthse. (1868) #2

ID NBR	15
LAT	41°16'16.894"
LON	72°20'37.019"
ELEV'N	21.60 M
FILE	15

Libby's Chimney (1934)

ID NBR	16
LAT	41°15'23.512120"
LON	72°20'32.760"
FILE	16

New London Harbor Lthse.

ID NBR	17
LAT	41°17'59.489
LON	72°05'24.855
ELEV'N	27.10 M
FILE	17

New London Ledge Lthse.

ID NBR	18
LAT	41°18'20.795
LON	72°04'40.516
ELEV'N	17.70 M
FILE	18

Seaside Sanitarium Elev. Tank

ID NBR	19
LAT	41°18'13.034
LON	72°05'57.667
FILE	19

Bartlett Reef Lt.

ID NBR	20
LAT	41°16'27.924
LON	72°08'15.740
FILE	20

Seaflower Reef Lt.

ID NBR	21
LAT	41°17'45.245
LON	72°02'01.462
FILE	21

Agnd RD — R/H - 20-11-83

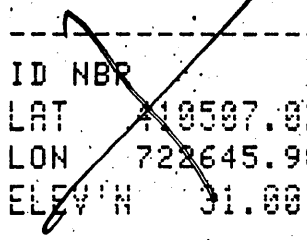
See the Automated Control File Listing following these Lists.

PROJECT:

B660-Ru/He-83

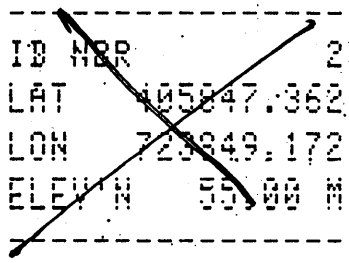
SIGNALS/STATIONS

Horton Point Lt.



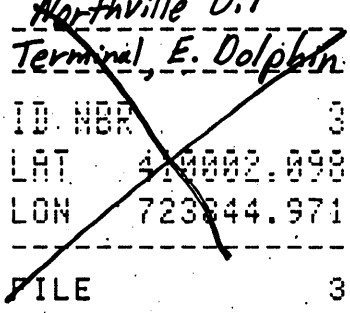
ID NBR	1
LAT	410507.028
LON	722645.981
ELEV'N	31.00 M
FILE	1

Tank 8



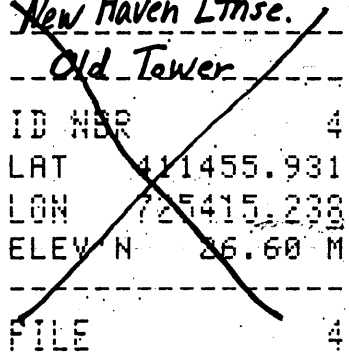
ID NBR	2
LAT	410547.362
LON	722849.172
ELEV'N	55.00 M
FILE	2

Northville 0:1 Terminal, E. Dolphin



ID NBR	3
LAT	410002.098
LON	723044.971
FILE	3

New Haven Lthse. Old Tower

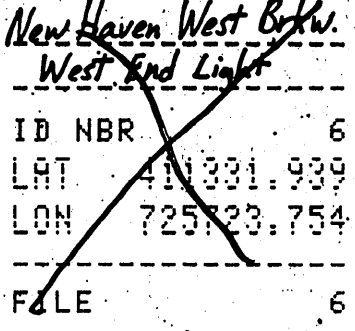


ID NBR	4
LAT	411455.931
LON	725415.238
ELEV'N	36.60 M
FILE	4

Falkner Is. Lthse (1882) #2

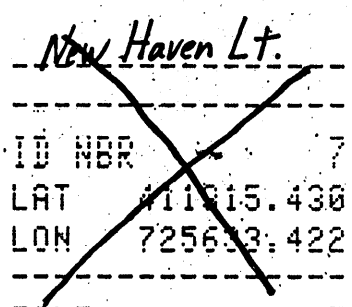
ID NBR	5
LAT	41°12'42.701"
LON	72°39'14.608"
ELEV'N	28.60 M
FILE	5

New Haven West Brkw. West End Light



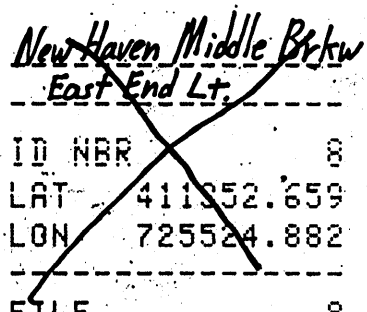
ID NBR	6
LAT	411331.939
LON	725723.754
FILE	6

New Haven Lt.



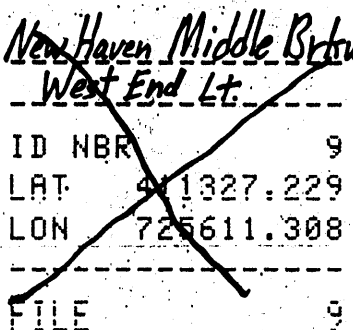
ID NBR	7
LAT	411315.430
LON	725653.422
FILE	7

New Haven Middle Brkw East End Lt.



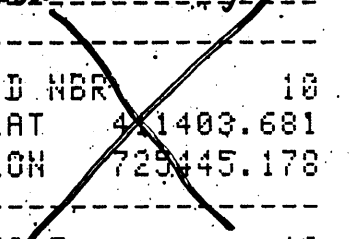
ID NBR	8
LAT	411252.659
LON	725524.882
FILE	8

New Haven Middle Brkw. West End Lt.



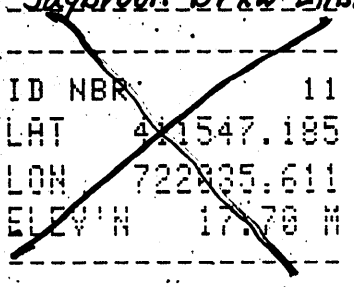
ID NBR	9
LAT	411327.229
LON	725611.308
FILE	9

Southwest Ledge Lt.



ID NBR	10
LAT	411403.681
LON	725445.178
FILE	10

Saybrook Brkw Lthse.



ID NBR	11
LAT	411547.185
LON	722835.611
ELEV'N	17.70 M
FILE	11

Duck Is. North Brkw Lt. (1934)

ID NBR	12
LAT	41°15'36.441"
LON	72°28'31.536"
FILE	12

Duck Is. West Brkw Lt. (1834)

ID NBR	13
LAT	41°15'22.266"
LON	72°29'08.296"
FILE	13

Kelsey Point Brkw Lt. (1934)

ID NBR	14
LAT	41°14'36.323"
LON	72°30'30.849"
FILE	14

See the Automated Control File Listing following these lists.

PROJECT:

B660-Rw/He-83
R/H 20-13-83

SIGNALS/STATIONS

Horton Point Lt.

ID NBR	1
LAT	410507.828
LON	722645.981
ELEV'N	31.00 M
FILE	1

Tank 8

ID NBR	2
LAT	410847.362
LON	723849.172
ELEV'N	55.00 M
FILE	2

Northville O:1
Terminal, E. Dolphin

ID NBR	3
LAT	410902.098
LON	723844.971
FILE	3

New Haven Lthse.
Old Tower

ID NBR	4
LAT	411455.931
LON	725415.238
ELEV'N	26.60 M
FILE	4

Falkner Is Lthse (1882)

ID NBR	5
LAT	41°12'42.701"
LON	72°39'14.608"
ELEV'N	28.60 M
FILE	5

New Haven West Brkw.
West End Light

ID NBR	6
LAT	411331.939
LON	725723.754
FILE	6

New Haven Lt.

ID NBR	7
LAT	411315.430
LON	725638.422
FILE	7

New Haven Middle Brkw
East End Lt.

ID NBR	8
LAT	411352.659
LON	725524.882
FILE	8

New Haven Middle Brkw.
West End Lt.

ID NBR	9
LAT	411327.229
LON	725611.308
FILE	9

Southwest Ledge Lt.

ID NBR	10
LAT	411403.681
LON	725445.178
FILE	10

Saybrook Brkw Lthse.

ID NBR	11
LAT	411547.185
LON	722935.611
ELEV'N	17.70 M
FILE	11

Duck Is.
North Brkw Lt.

ID NBR	12
LAT	411536.441
LON	722831.536
FILE	12

Duck Is.
West Brkw Lt.

ID NBR	13
LAT	411522.266
LON	722908.296
FILE	13

Kelsey Point Brkw Lt.
(1934)

ID NBR	14
LAT	41°14'36.323"
LON	72°30'30.849"
FILE	14

OPR-B660-Ru/He-83 — R/H-20-13-83

See the Automated Control File Listing following these Lists.

. Saybrook Lthse. (1861)

ID NBR	15
LAT	41°16'16.894"
LON	72°20'37.019"
ELEV'N	21.60 M
FILE	15

~~. Libby's Chimney~~

ID NBR	16
LAT	41°15'23.512
LON	72°20'2.760
FILE	16

. New London Harbor Lthse. (1835)

ID NBR	17
LAT	41°18'59.489"
LON	72°05'24.855"
ELEV'N	27.10 M
FILE	17

. New London Ledge Lthse. (1932)

ID NBR	18
LAT	41°16'20.792"
LON	72°04'40.512"
ELEV'N	17.70 M
FILE	18

. Seaside Sanitarium Elev. Tank (1932)

ID NBR	19
LAT	41°18'13.034"
LON	72°07'57.667"
FILE	19

. Bartlett Reef Lt. (1954)

ID NBR	20
LAT	41°16'27.924"
LON	72°08'15.740"
FILE	20

. Seaflower Reef Lt. (1954)

ID NBR	21
LAT	41°17'45.245"
LON	72°02'01.462"
FILE	21

PROJECT:

OPR-B660-RDHE-84

SIGNALS/STATIONS

TOWER (1972)

ID NBR 1
LAT 411628.647
LON 720835.159
ELEV'N 49.00 M
FILE 1

WATCH HILL LTHSE. (1873)

ID NBR 2
LAT 411813.646
LON 715132.552
ELEV'N 16.60 M
FILE 2

BARTLETT REEF LT. (1954)

ID NBR 3
LAT 411627.924
LON 720815.740
FILE 3

NEW LONDON HARBOR LIGHTHOUSE (1835)

ID NBR 4
LAT 411859.489
LON 720524.855
FILE 4

NEW LONDON LEDGE LIGHTHOUSE (1932)

ID NBR 5
LAT 41°16'28.79X2"
LON 72°04'40.51X2"
ELEV'N 17.70 M
FILE 5

SEAFLOWER REEF LT. (1954)

ID NBR 6
LAT 41°17'45.245"
LON 72°02'01.462"
FILE 6

NORTH DUMPLING LTHSE. (1874)

ID NBR 7
LAT 41°17'15.93X4"
LON 72°01'11.084"
FILE 7

LATIMER REEF LTHSE. (1886)

ID NBR 8
LAT 411815.871
LON 715601.684
FILE 8

RACE ROCK LTHSE. (1882)

ID NBR 9
LAT 411436.153
LON 720251.414
FILE 9

LITTLE GULL ISLAND LTHSE (1874)

ID NBR 10
LAT 411222.673
LON 720636.278
FILE 10

FISHERS IS. CG CUPOLA (1934)

ID NBR 11
LAT 411658.787
LON 715641.848
FILE 11

SAYBROOK LTHSE. (1861)

ID NBR 12
LAT 41°16'16.894"
LON 72°03'37.01X9"
ELEV'N 21.60 M
FILE 12

Note: SAYBROOK LTHSE USED FOR ELEC CONTROL, INADVERTENTLY LINED OUT.

FE257 05-15-85

RECORD NUMBER	YR	STA NUM	CARTO CODE	LABEL ANGLE	VECTOR DISP.	PLOT CODE	NAME	STATION HEIGHT	FREQUENCY (KHZ)	LATITUDE	LONGITUDE
1	83	1	250	340.30	0.52	3	FALKNER ISLAND LIGHTHOUSE, 1882	28.6	149835.00	41 12 42.701	72 39 14.608
2	83	2	250	340.30	0.52	3	SAYBROOK LIGHTHOUSE, 1861	21.6	149835.00	41 16 16.894	72 20 37.019
3	83	3	250	340.30	0.52	3	NEW LONDON LEDGE LIGHTHOUSE,1932	17.7	149835.00	41 18 20.742	72 4 40.512
4	83	4	139	340.30	0.52	3	KELSEY POINT BREAKWATER	0.0	0.00	41 14 36.323	72 30 30.849
5	83	4	139	328.84	1.27	3	LIGHT, 1934	0.0	0.00	41 14 36.323	72 30 30.849
6	83	5	139	340.30	0.52	3	NEW LONDON HARBOR	27.1	0.00	41 18 59.489	72 5 24.855
7	83	5	139	328.84	1.27	3	LIGHTHOUSE, 1835	27.1	0.00	41 18 59.489	72 05 24.855
8	83	6	139	340.30	0.52	3	SEASIDE SANITARIUM	0.0	0.00	41 18 13.034	72 7 57.667
9	83	6	139	328.84	1.27	3	ELEVATED TANK, 1932	0.0	0.00	41 18 13.034	72 07 57.667
10	83	7	139	340.30	0.52	3	BARTLETT REEF LIGHT, 1954	0.0	0.00	41 16 27.924	72 8 15.740
11	83	8	139	328.84	1.27	3	SEAFLOWER REEF LIGHT, 1954	0.0	0.00	41 17 45.245	72 2 1.462
12	83	9	139	340.30	0.52	3	NORTH DUMPLING LIGHTHOUSE, 1874	0.0	0.00	41 17 15.930	72 1 11.084
13	83	10	139	328.84	1.27	3	LIBBY'S CHIMNEY, 1934	0.0	0.00	41 15 23.120	72 29 32.760
14	83	11	139	340.30	0.52	3	DUCK ISLAND NORTH	0.0	0.00	41 15 36.441	72 28 31.536
15	83	11	139	328.84	1.27	3	BREAKWATER LIGHT,1934	0.0	0.00	41 15 36.441	72 28 31.536
16	83	12	139	340.30	0.52	3	DUCK ISLAND WEST	0.0	0.00	41 15 22.266	72 29 8.296
17	83	12	139	328.84	1.27	3	BREAKWATER LIGHT, 1934	0.0	0.00	41 15 22.266	72 29 08.296

FILE CERTIFIED CORRECT FOR PLOTTING BY:..... DATE:.....

E. PNEUMO DEPTH GAGE CALIBRATIONS

NEGATIVE REPORT

F. DIVING REPORTS

NEGATIVE REPORT

H. LOCAL NOTICE TO MARINERS REPORT

NEGATIVE REPORT

J. DANGERS TO NAVIGATION REPORT

NEGATIVE REPORT

L. SONAR COVERAGE ABSTRACT - TARGET ABSTRACT

Sonar Coverage Abstract OPR-B660-Ru/He-83 Item No. RIH.20-1 33

Search Track Number	Range Scale (m)	Minimum Towfish Height (m)	Minimum Effective Scanning Range (m)	Search Track Number	Range Scale (m)	Minimum Towfish Height (m)	Minimum Effective Scanning Range (m)	Maximum Track Spacing (m)	Coverage Analysis
1148-1178	200 m	21 m	200 m	1220-1179	200 m	19 m	188 m	270 m	100%
1220-1179	200	19	188	1269-1221	200	18	178	300	100
1269-1224	200	18	178	1270-1296	200	15	148	325	100
1224-1221	200	30	200	1296-1298	200	22	200	350	100
1270-1298	200	15	148	1087-1147	400	–	200 approx	280	100
1087-1110	400	–	200 approx	1560-1538	200	21	200	340	100
1110-1113	400	–	200 approx	1538-1535	200	27	200	410	<100 see W.D.
1113-1147	400	–	200 approx	1535-1500	200	22	200	360	100
1560-1500	200	21	200	1561-1589	200	19	188	300	100
1561-1589	200	19	188	1299-1342	200	20	198	350	100
1299-1342	200	20	198	1626-1590	200	20	198	340	100

SIDE SCAN TARGET ABSTRACT

DATE ~~SEP~~ 15, OCT 4, 5

J.D. ~~258~~, 277, 278

OPR- B660-Ru/He-83
R/H 20-13-83

ITEM # NORTHVILLE OFFSHORE

SHIP RUDE/HECK

TARGET NUMBER	J.D. TIME UCT	FIX #	COMPUTED RATES	TOW SPEED	LENGTH OF TOW (M)	~~REDUCED~~ LEAST DEPTH (FT)	CHARTED DEPTH (FT)	HEIGHT OF FISH R1 (M)	R2 (M)	R3 (M)	R4 (M)	HEIGHT OF TARGET (M/~~FT~~)	RANGE OF TARGET (M)	WIDTH OF TARGET (M/~~FT~~)	TOWFISH LAYBACK (M)
1@	10258	1123	R1 23075 R2 11835	4kts	15.2	129.9	132	32.0	44	48	52	2.46	32.61	5.22	36.5
2	258	1137-1138	R1 26725 R2 9625	4	15.2	—	117	26.5	Position Plot only						36.5
3	258	1143-1144	R1 28435 R2 9040	4	15.2	—	130	37.5	Position Plot only						36.5
4	~~258~~ 277	1217-1218	R1 16075 R2 18900	4	15.2	—	96	22.0	160.5	165.0	*	—	159.25	4.53	36.5
5	278	1238-1239	R1 22780 R2 11690	4	25.9	—	132	34.5	68.0	81.0	*	—	59.75	14.46	47.2
6	278	1265-1266	R1 16075 R2 18900	4	21.3	—	96	18.0	60.0	69.0	*	—	57.84	9.29	42.6
7a	278	1287-1288	R1 22850 R2 11865	4	25.9	128.7	132	26.5	37.0	38.0	42.0	2.52	28.18	1.30	47.2
8	278	1297-1298	R1 28435 R2 9040	4	25.9	—	130	33.0	Position Plot only						47.2
9@	278	1325-~~1326~~1327	R1 23475 R2 12395	4	25.9	114.7	125	25.0	30.0	31.5	36.0	3.13	20.53	2.14	47.2
10	278	~~1326~~-1327	R1 23850 R2 12175	4	25.9	—	141	27.0	45.0	48.0	*	—	38.14	3.50	47.2
11@	278	1327-1328	R1 24125 R2 12075	4	25.9	113.0	114	28.0	131.5	133.0	139.5	0.31	128.55	1.53	47.2
12	278	1342	R1 28635 R2 9775	4	26.9	—	104		Position Plot only - Boulder Field						47.2
13	278	1511-1512	R1 26740 R2 9725	4	27.4	115.5	117	24.0	92.0	97.0	102.0	0.46	34.78	10.46	48.7
14	278	1514-1515	R1 26615 R2 10310	4	27.4	106.6	122	25.0	105.0	110.0	118.0	1.69	102.38	5.12	48.7
15@	278	1524-1525	R1 23375 R2 12025	4	27.4	129.1	152	32.0	105.0	107.0	110.0	0.87	100.28	2.09	48.7

* No shadow observed on sonargram. No height of target computation.

SIDE SCAN TARGET ABSTRACT

DATE _____ OPR- B660-RJ/He-83 ITEM # _____

J.D. 278 R/H 20-13-83 SHIP _____

TARGET NUMBER	J.D. TIME UCT	FIX #	COMPUTED RATES	TOW SPEED	LENGTH OF TOW (M)	~~REDUCED~~ LEAST DEPTH (FT)	CHARTED DEPTH (FT)	HEIGHT OF FISH R1 (M)	R2 (M)	R3 (M)	R4 (M)	HEIGHT OF TARGET (M/FT)	RANGE OF TARGET (M)	WIDTH OF TARGET (M/FT)	TOWFISH LAYBACK (M)
15(b)	278	1524-1525	R1 23260 R2 11935	4	27.4	126.6	132	30.0	50.5	52.0	55.0	1.64	41.78	1.80	48.7
15(c)	278	1524-1525	R1 23290 R2 12040	4	27.4	126.6	132	27.0	37.0	38.5	41.0	1.65	26.95	2.03	48.7
16@	278	1525-1526	R1 23140 R2 12200	4	27.4	120.2	125	25.0	46.5	48.0	51.0	1.47	40.11	1.73	48.7
17@	278	1526-1527	R1 23000 R2 12285	4	27.4	120.5	125	30.0	62.0	63.0	66.0	1.36	54.99	1.13	48.7
18	278	1535-1536	R1 20825 R2 14335	4	27.4	116.3	126	28.5	68.0	69.5	77.6	2.97	63.03	1.62	48.7
19	278	1544-1545	R1 18720 R2 16400	4	27.4	—	113	25.5	75.0	90.0	*	—	71.54	15.60	48.7
20	278	1546-1547	R1 18350 R2 16835	4	27.4	—	111	24.0	90.0	99.0	*	—	87.51	9.23	48.7
21	278	1555-1556	R1 16670 R2 19610	4	21.3	107	108	20.0	123.0	124.0	126.0	0.32	121.41	1.01	42.6
22	278	1555-1556	R1 16490 R2 19375	4	21.3	—	96	20.0	115.0	116.0	*	—	113.30	1.01	42.6
23	278	1570-1571	R1 19770 R2 15450	4	21.3	—	119		Position Plot Only; Sand Wave						42.6
24	278	1572-1573	R1 20825 R2 14335	4	21.3	119.8	126	24.0	70.5	71.0	82.5	1.89	66.94	5.77	42.6
25@	278	1577-1578	R1 23285 R2 12200	4	21.3	119.2	125	24.0	75.5	76.0	82.0	1.76	72.15	0.52	42.6
26@	278	1578-1579	R1 23845 R2 12030	4	21.3	140.9	141	17.5	124.0	125.0	127.0	0.27	122.8	1.01	42.6
27	278	1583-1584	R1 26800 R2 10165	4	21.3	105.7	117	Position Plot of Spike - See Appendix D.							42.6
28	278	1584-1585	R1 26895 R2 10125	4	21.3	109.7	117	"	"		"	"	"		42.6
29		1585 1586	27610 9875		21.3	102.7	117	"	"		"	"	"		42.6

*No Shadow observed on sonargram. No height computation.

SIDE SCAN TARGET ABSTRACT

DATE _____ OPR- B660-Ru/He-83 R/H 20-13-83 ITEM # _____

J.D. 278 SHIP _____

TARGET NUMBER	J.D. TIME UCT	FIX #	COMPUTED RATES	TOW SPEED	LENGTH OF TOW (M)	~~REDUCED~~ LEAST DEPTH (FT)	CHARTED DEPTH (FT)	HEIGHT OF FISH R1 (M)	R2 (M)	R3 (M)	R4 (M)	HEIGHT OF TARGET (M/~~FT~~)	RANGE OF TARGET (M)	WIDTH OF TARGET (M/~~FT~~)	TOWFISH LAYBACK (M)
30	278	1586-1587	R1 28025 R2 9770	4 kts	27.4	111.2	104	Position Plot of Spike - See Appendix O.							48.7
31	278	1588-1589	R1 29360 R2 9535	4	27.4	112.7	130	"	"		"		"		48.7
32	278	1590	R1 29470 R2 9995	4	27.4	—	90	20.0	64.5	65.5	69.0	1.01	61.64	1.05	48.7
33	278	1596-1597	R1 27375 R2 10575	4	27.4	96.7	85	Position Plot of Spike - See Appendix O.							48.7
34	278	1601-1602	R1 25165 R2 11600	4	27.4	110.7	114	28.5	94.5	95.5	99.0	1.01	90.41	1.04	48.7
35	278	1602-1603	R1 24950 R2 11477	4	27.4	—	114	28.5	126.0	127.0	*	—	122.96	1.02	48.7
36	278	1602-1603	R1 24935 R2 11685	4	27.4	109.9	114	28.0	53.0	54.0	56.5	1.24	45.75	1.15	48.7
37	278	1603-1604	R1 24275 R2 12090	4	27.4	102.4	114	28.0	39.0	41.5	47.5	3.54	30.37	3.15	48.7
38b	278	1604-1605	R1 24095 R2 12190	4	27.4	104.8	114	28.0	57.5	58.5	65.0	2.80	51.68	1.11	48.7
39a	278	1605-1606	R1 23955 R2 12400	4	27.4	101.9	114	24.0	55.0	57.0	62.0	1.94	50.38	2.18	48.7
40	278	1605-1606	R1 23885 R2 12600	4	27.4	111.7	114	25.0	135.0	136.0	140.0	0.71	132.80	1.02	48.7
41	278	1605-1606	R1 23650 R2 12585	4	27.4	120.4	125	26.5	52.0	54.0	57.0	1.39	45.54	2.27	48.7
42	278	1609-1610	R1 22185 R2 13670	4	27.4	—	158	Position Plot only			*				48.7
43	278	1616-1617	R1 19435 R2 16675	4	27.4	101.2	107	Position Plot of Spike - See Appendix O.							48.7
44	278		R1 18000 R2 18700	4	27.4	—	126	Sand Wave			*				48.7

* No shadow observed on sonargram. No height computation

SIDE SCAN TARGET ABSTRACT

DATE _____ OPR- B660-Ru/He-83 R/K 20-13-83 ITEM # _____

J.D. _____ SHIP _____

TARGET NUMBER	J.D. TIME UCT	FIX #	COMPUTED RATES	TOW SPEED	LENGTH OF TOW (M)	~~REDUCED~~ LEAST DEPTH (FT)	CHARTED DEPTH (FT)	HEIGHT OF FISH R1 (M)	R2 (M)	R3 (M)	R4 (M)	HEIGHT OF TARGET (M/~~FT~~)	RANGE OF TARGET (M)	WIDTH OF TARGET (M/FT)	TOWFISH LAYBACK (M)
45	278	1615-1616	R_1 19960 R_2 16050	4	27.4	101.2	99	Position Plot of Spike - See Appendix O.							48.7
31@	278	1588-1589	R_1 29080 R_2 9575	4	27.4	111.2	130	"		"			"		48.7

*No shadow observed on sonargram. No height computation.

OPR- BGCO-RU/HE-83

SHEET R/H 20-13-83

SIDE SCAN SONAR TARGET LIST

TARGET NUMBER	CHARTED DEPTH (FT)	~~REDUCED~~ LEAST DEPTH (FT)	HEIGHT OF TARGET (FT)	WIDTH OF TARGET (FT)	POSITION	FURTHER INVESTIGATION TYPE	DATE	RESULTS	REMARKS
1a	132	123.9	8.1	17.1	φ 041-10-10.0 λ 072-23-05.3	None			Height of Target not 10% of depth
2	117	POSITION PLOT		ONLY	φ 041-11-05.3 λ 072-20-14.9	" "			Sand waves
3,8	130	POSITION	PLOT	ONLY	φ 041-11-33.6 λ 072-18-57.6	" "			Sand waves
4,6	96	—	—	22.7	φ 041-08-25.4 λ 072-29-14.9	" "			Height of Target not 10% of depth
5	132	—	—	47.4	φ 041-10-19.1 λ 072-23-15.7	" "			North end of boulder field
7a	132	123.7	8.3	4.3	φ 041-10-11.2 λ 072-23-14.8	" "			Height of Target not 10% of depth
9a	125	114.7	10.3	7.0	φ 041-09-48.6 λ 072-23-54.0	" "			" " "
10	141	—	—	11.5	φ 041-09-52.6 λ 072-22-36.3	" "			" " "
11a, 386	114	104.8	9.2	3.6	φ 041-09-53.9 λ 072-22-23.8	" "			Recommend clearance by wire drag along with adjacent boulder field
12	104	POSITION	PLOT	ONLY	φ 041-11-10.1 λ 072-18-51.8	" "			Boulder Field
13	117	115.5	1.5	34.3	φ 041-11-02.1 λ 072-20-14.8	" "			Sand Wave; Not 10% of Depth
14	122	106.6	5.5	16.3	φ 041-10-42.8 λ 072-20-49.5	" "			Height of Target not 10% of depth
15a	132	129.1	2.9	6.9	φ 041-10-01.2 λ 072-22-54.6	" "			" " "
15b	132	126.6	5.4	5.9	φ 041-10-05.1 λ 072-22-58.6	" "			" " "
15c	132	126.6	5.4	6.7	φ 041-10-01.5 λ 072-22-58.3	" "			" " "
16a.	125	120.2	4.8	5.6	φ 041-09-57.8 λ 072-23-06.0	" "			" " "
17a	125	120.5	4.5	3.7	φ 041-09-52.4 λ 072-23-12.6	" "			" " "

A-45

OPR- B660-Ru/He-83

SHEET R/H 20-13-83

SIDE SCAN SONAR TARGET LIST

TARGET NUMBER	CHARTED DEPTH (FT)	~~REDUCED~~ LEAST DEPTH (FT)	HEIGHT OF TARGET (FT)	WIDTH OF TARGET (FT)	POSITION	FURTHER INVESTIGATION TYPE	DATE	RESULTS	REMARKS
18,24	126	116.3	9.7	5.3	φ 041-09-17.9 λ 072-25-03.2	WIRE-DRAG	JO236	Cleared to 75' in one direction NE→SW	AWOLS #2729
19	113	—	—	51.2	φ 041-08-47.9 λ 072-26-54.0	None		Appears to be part of a large sand wave/ridge ↓	Height of Target not 10% of depth
20	111	—	—	30.3	φ 041-08-41.4 λ 072-27-15.0	" "		" "	" " "
21	108	107.0	1.0	3.3	φ 041-07-55.3 λ 072-29-14.1	" "		" "	" " "
22	96	—	—	3.3	φ 041-08-03.4 λ 072-29-11.4	" "		" "	" " "
23	119	POSITION	PLOT	ONLY	φ 041-08-59.3 λ 072-25-59.6	" "			Sand wave; Not 10% of depth
25a	125	119.2	4.8	1.7	φ 041-09-52.4 λ 072-23-00.0	" "			Height of Target not 10% of depth
26a	141	140.1	0.9	3.3	φ 041-09-57.3 λ 072-22-35.1	" "			" " "
27	117	105.7	—	—	φ 041-10-47.8 λ 072-20-14.6	" "			Prior Survey H-9181 Depth 112'
28	117	109.7	—	—	φ 041-10-49.3 λ 072-20-10.2	" "			" " " 112'
29	117	102.7	—	—	φ 041-11-00.0 λ 072-19-37.5	" "			" " " 107'
30	104	111.2	—	—	φ 041-11-05.8 λ 072-19-18.8	" "			" " " 110'
31	130	112.7	—	—	φ 041-11-26.0 λ 072-18-18.6	" "			" " " 122'
31a	130	111.2	—	—	φ 041-11-21.4 λ 072-18-31.2	" "			" " " 121'
32	90	86.5	3.3	3.4	φ 041-11-11.0 λ 072-18-15.7	" "			Height of Target not 10% of depth
33	85	96.7	—	—	φ 041-10-35.8 λ 072-19-51.9	" "			Prior Survey H-9181 Depth 106'
34	114	110.7	3.3	3.4	φ 041-10-03.5 λ 072-21-35.5	" "			Height of Target not 10% of depth

OPR- BCGO-Ru/Hz-83

SHEET A/H 20-13-83

SIDE SCAN SONAR TARGET LIST

TARGET NUMBER	CHARTED DEPTH (FT)	~~REDUCED~~ LEAST DEPTH (FT)	HEIGHT OF TARGET (FT)	WIDTH OF TARGET (FT)	POSITION	FURTHER INVESTIGATION TYPE	DATE	RESULTS	REMARKS
35	114	—	—	3.3	φ041-10-08.3 λ072-21-43.7	None			Height of Target not 10% of depth
36	114	109.9	4.1	3.8	φ041-10-01.7 λ072-21-46.1	" "			" " "
37	114	102.4	11.6	10.3	φ041-09-52.4 λ072-22-17.7	" "			Recommend clearance by wire drag along with adjacent boulder field
38	114	104.8	9.2	9.6	φ041-09-50.4 λ072-22-26.2	" "			Recommend clearance by wire drag along with adjacent boulder field
39a	114	101.9	16.4	18.6	φ041-09-45.6 λ072-22-38.1	" "			Height of Target not 10% of depth
40	114	111.7	2.3	3.3	φ041-09-39.0 λ072-22-39.0	" "			" " "
41	125	120.4	4.6	7.4	φ041-09-41.2 λ072-22-48.7	" "			" " "
42	158	Position Plot Only			φ041-09-21.3 λ072-24-00.8	" "			" " "
43	107	101.2	—	—	φ041-08-27.6 λ072-26-32.2	" "			Prior Survey H-9181 Depth 129'
44	126	Position Plot Only			φ041-07-53.4 λ072-28-04.0	" "			Sandwaves
45	99	101.2	—	—	φ041-08-38.1 λ072-26-01.8	" "			Prior Survey H-9181 Depth 106'

A-41

APPENDIX O.

SOUNDINGS APPLIED TO SMOOTH field SHEET

None of the following sounding were plotted on the final field sheet or could be found plotted on any other of the boatsheets supplied.

JD	Fix #'s	Time UTC	Analog Depth (ft)	Draft, Settlement + Squat Corr. of +7.2 feet applied	Predicted Tide Corrector (ft)	Reduced Depth (ft)	Plotted Depth (ft)	Target Number
278	1583-1584	195345	97.0	105.2	+0.5	105.7	105	27
278	1584-1585	195418	102.0	109.2	+0.5	109.7	109	28
278	1585-1586	195810	95.0	102.2	+0.5	102.7	102	29
278	1586-1587	200015	93.5	110.7	+0.5	111.2	111	30
278	1588-1589	200805	105.0	112.2	+0.5	112.7	112	31
278	1596-1597	210300	89.0	96.2	+0.5	96.7	96	33
278	1616-1617	220500	94.0	101.2	+0.0	101.2	101	43
278	1615-1616	220040	94.0	101.2	+0.0	101.2	101	45
278	1588-1589	200610	103.5	110.7	+0.5	111.2	111	31@

March 26, 1984

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

TIDE NOTE FOR HYDROGRAPHIC SHEET

Marine Center: Atlantic

OPR: B660

HYDROGRAPHIC SHEET: FE-257 (R/H-20-11-83)

Locality: Long Island Sound

Time Period: August 24 - 25, 1983

Tide Station Used: 876-7150 Bridgeport, Connecticut

Plane Of Reference (Mean Lower Low Water): 2.05 Ft.

Height Of Mean High Water Above Plane Of Reference: 6.8 Ft.

Remarks: Recommended Zoning:

Apply a -25 minute time correction and x0.61 range ratio

James R Hubbard
Chief, Tidal Datum Section

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

March 26, 1984

TIDE NOTE FOR HYDROGRAPHIC SHEET

Marine Center: Atlantic

OPR: B660

HYDROGRAPHIC SHEET: R/H 20-13-83

Locality: Long Island Sound

Time Period: September 15 - October 5, 1983

Tide Station Used: 846-7150 Bridgeport, Connecticut

Plane Of Reference (Mean Lower Low Water): 2.05 Ft.

Height Of Mean High Water Above Plane Of Reference: 6.8 Ft.

Remarks: Recommended Zoning:

Apply a -25 minute time correction and x0.61 range ratio

James C. Hubbard
Chief, Tidal Datum Section

DATE: 12/19/84

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

TIDE NOTE FOR HYDROGRAPHIC SHEET

Marine Center: Atlantic

OPR: B660

Hydrographic Sheet: R/H 20-13-84

Locality: Long Island Sound

Time Period: October 25, 1984

Tide Station Used: 846-7150 Bridgeport, CT

Plane of Reference (Mean Lower Low Water): 2.05 ft

Height of Mean High Water Above Plane of Reference: 6.8 ft

Remarks: Recommended Zoning:

For AWOIS Item #2729 apply -25 minute time correction and x 0.61 range ratio to all heights.

Corrected by telephone conversation (May 1, 1985) with Mr. Joe Mullins, Tidal Datum Section, N/OMA 123.

James R. Hubbard
Chief, Tidal Datums Section

NOAA FORM 76-155
(11-72)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

SURVEY NUMBER

FE-257 WD

GEOGRAPHIC NAMES

Name on Survey	A ON CHART NO. 12354	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K	
LONG ISLAND SOUND (title)	✓									1
NEW YORK (title)	✓									2
SIXMILE REEF (title)	✓									3
										4
										5
										6
										7
										8
										9
										10
										11
										12
										13
										14
										15
										16
										17
				Approved:						18
										19
				Chas. E. Harrington						20
				Chief Geographer - N/CG2x5						21
				MAY 15 [redacted]						22
										23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

NOAA FORM 61-29
(12-71)

U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

REFERENCE NO.

MOA 23-76-85

LETTER TRANSMITTING DATA

DATA AS LISTED BELOW WERE FORWARDED TO YOU BY (Check):

☐ ORDINARY MAIL ☐ AIR MAIL

☒ REGISTERED MAIL ☐ EXPRESS

☐ GBL (Give number) _____

TO:

CHIEF, DATA CONTROL SECTION
HYDROGRAPHIC SURVEYS BRANCH, N/CG243
NATIONAL OCEAN SERVICE, NOAA
ROCKVILLE, MD 20852

DATE FORWARDED

July 8, 1985

NUMBER OF PACKAGES

Two (2)

NOTE: A separate transmittal letter is to be used for each type of data, as tidal data, seismology, geomagnetism, etc. State the number of packages and include an executed copy of the transmittal letter in each package. In addition the original and one copy of the letter should be sent under separate cover. The copy will be returned as a receipt. This form should not be used for correspondence or transmitting accounting documents.

FE-257 WD R/H-20-11-83 & R/H-20-13-83/84 OPR-B660-R4/HE-83/84
New York, Long Island Sound, Southeast of Sixmile Reef

Package #1 of 2 (Tube)
1 - Original Descriptive Report containing reports for R/H-20-11-83 and R/H-20-13-83/84 with one Smooth Wire Drag A&D Sheet and one Smooth Wire Drag Position Overlay included.
2 - Horizontal Control Overlays.
1 - Final Field Sheet containing side-scan sonar contacts and coverage.
12 - Preliminary Field Sheets.
2 - Field Wire Drag Strip Plots.
4 - Office verified Wire Drag Strip Plots.

Package #2 of 2 (Box)
2 - Accordian Folders containing echograms and field data printouts.
2 - Sounding Volumes.
4 - Wire Drag Volumes.
1 - Envelope containing Side-Scan Sonargrams.
1 - Envelope containing Smooth Tide Data and Printouts.
1 - Envelope containing data removed from the Descriptive Report (R/H-20-11-83 and R/H-20-13-83/84).

FROM: (Signature) Maurice B. Hickson, III
for LCDR David B. MacFarland, Jr.

RECEIVED THE ABOVE
(Name, Division, Date)

Dwayne S. Clark
July 17, 1985
N/CG243

Return receipted copy to:

ATLANTIC MARINE CENTER
HYDROGRAPHIC SURVEYS BRANCH [N/MOA23]
439 W. YORK STREET
NORFOLK, VIRGINIA 23510

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NO.: FE-257 WD

Number of positions		501
Number of soundings		N/A
Number of control stations		12
	TIME-HOURS	**DATE COMPLETED**
Preprocessing Examination	9	March 5, 1984
Verification of Field Data	43	May 8, 1985
Quality Control Checks		
Evaluation and Analysis	60	May 29, 1985
Final Inspection	8	May 28, 1985
TOTAL TIME	120	
Marine Center Approval		May 31, 1985

Transmittal letter of survey and survey records will be included in the Descriptive Report to identify the records accompanying the survey.

ATLANTIC MARINE CENTER
EVALUATION REPORT

REGISTRY NO.: FE-257 WD

FIELD NO.: R/H-20-11-83 &
R/H-20-13-83/84

New York, Long Island Sound, Southeast of Sixmile Reef

SURVEYED: August 24, 1983 through October 29, 1984

SCALE: 1:20,000
1:40,000 - Smooth Plot

PROJECT NO.: OPR-B660-RU/HE-83 &
OPR-B660-RU/HE-84

SOUNDINGS: Raytheon DE-719B Fathometer, Raytheon DSF-6000N Fathometer, Klein Side-Scan Sonar, Wire Drag

CONTROL: Del Norte 520 (Range/Range)

Chief of Party.....D. D. Winter (1983)
.....R. K. Norris (1984)

Surveyed by.....N. G. Millett
.....E. M. Clark
.....J. C. Talbott
.....T. G. Callahan

1. INTRODUCTION

a. The purpose of this survey is to provide 100% side-scan sonar coverage over a portion of the Northville Industries Corporation oil tanker route and provide wire drag clearances over two known wrecks, AWOIS Items 2729 and 2730. AWOIS Item 2729 is located in Latitude 41°09'19.25"N, Longitude 72°25'04.09"W, originating from prior survey FE-241 WD (1982) and is believed to be the wreck of the THAMES, a 57-foot iron hull tug. AWOIS Item 2730 is located in Latitude 41°10'29.52"N, Longitude 72°25'34.40"W, originating from prior survey FE-241 WD (1982) and is believed to be the wreck of the BARATARIA, a 69-foot steel hull tug.

b. This survey is a side-scan sonar and wire drag survey. Raytheon 719B Fathometers (1983) and Raytheon DSF-6000N Fathometers (1984) were operated concurrently with side-scan sonar and wire drag but the soundings are of reconnaissance value only as necessary sounding correctors were not determined. No hydrography beyond reconnaissance hydrography was required. No field plots or any data tapes were made for this hydrography.

c. This survey is a combination of two field sheets (R/H-20-11-83 and R/H-20-13-83/84) covering a common area over a two year period. The two Descriptive Reports are combined under one cover with R/H-20-11-83 first and R/H-20-13-83/84 following. This Evaluation Report covers both Descriptive Reports.

d. A standard smooth sheet (A & D) and accompanying position overlay was generated for the wire drag portion of this survey and is attached to this report. No smooth plot was generated for the side-scan sonar portion of this survey since the final field sheet adequately displays the lines run and the contacts found. A chart section depicting the area insonified, the boulder field found, the area described as rocky, and the delineation of areas of sand waves by the hydrographer is attached to this report.

e. Corrections and notes made by the Evaluator to the Descriptive Reports are denoted in red ink.

2. CONTROL AND SHORELINE

a. The source of control is adequately discussed in section F. and Appendix D. of the Descriptive Reports.

b. There is no shoreline within the limits of this survey.

3. HYDROGRAPHY

The hydrography collected on this survey is of reconnaissance value only.

4. CONDITION OF SURVEY

The final field sheet, survey records, and reports are adequate and conform to the requirements of the Hydrographic Manual and Wire Drag Manual with the following exception:

a. In general, the Descriptive Reports are well written.

b. Prior surveys common to the survey area which were identified in the Project Instructions were used for comparisons by the hydrographer. The Project Instructions were deficient in that they did not list or require comparisons with prior survey H-1591 (1883).

c. Prior survey H-9089 (1969) was used by the hydrographer for comparisons but was not submitted with the survey's field records.

d. Lift computations and lift and tide applications to field data was not in accordance with the Wire Drag Manual. Lifts were recomputed during verification. Lifts and smooth tides were applied to the verified data in accordance with the Wire Drag Manual during verification.

e. The calibrations of the position control systems in the 1983 portion of R/H-20-13-83/84 was accomplished by a method not approved by the Hydrographic Manual, section 4.4.3.3. See section G. of the R/H-20-13-83/84 Descriptive Report.

f. The geographic positions of four signals listed in Appendix D. of the Descriptive Reports contained slight discrepancies and were corrected during verification. A complete automated listing of the

survey's Control File is attached to Appendix D. of the Descriptive Reports.

g. A few contacts were flagged on the sonargrams but were not listed in the Target Abstract. These contacts were in close proximity of other contacts of more prominence. These few contacts are of no consequence but all flagged contacts should be listed and addressed in the Target Abstract.

h. No least depths on contacts were determined by conventional methods as required by section 7.12.3.1. of both the 1983 and 1984 Project Instructions because the hydrographer determined that no critical features existed except the two AWOIS Items 2729 and 2730. AWOIS Item 2729 was resolved by wire drag clearances in opposing directions. AWOIS Item 2730 was cleared by wire drag in one direction only. These two items are further addressed section 7. of this report.

5. JUNCTIONS

Adequate junctions exist with H-10162 WD (1983-84) to the west and FE-268 WD (1983-84) to the east. Adequate side-scan sonar overlap exists between the present survey and the two junctional surveys. Both junctional surveys contain wire drag that is common to the junctional areas of the present survey and provide clearance over some of the present survey's side-scan sonar contacts. The wire drag of both junctional surveys H-10162 WD and FE-268 WD do not junction with the wire drag accomplished on the present survey. No contemporary surveys exist to the north or south of the present survey.

6. COMPARISON WITH PRIOR SURVEYS

a. Hydrographic Surveys

H-1591 (1883) 1:40,000
H-9089 (1969) 1:20,000 (unverified, category 2 survey)
H-9181 (1970) 1:20,000

Prior survey H-9181 (1970) covers approximately 75% of the area covered by present side-scan sonar data and all of the present wire drag data. No conflict exist between prior hydrography and present wire drag effective depths. Adequate comparisons between prior hydrography and present reconnaissance hydrography are made by the hydrographer in section K. of the Descriptive Reports. Side-scan sonar contacts within the common area range from 0 to 28 feet shoaler than prior soundings. Only two contacts have computed least depths shoaler than 100 feet (contact 32 with a computed least depth of 86 feet and contact 33 with a computed least depth of 96 feet). Both contacts 32 and 33 are south of the southern edge of the corridor limit. Many of the side-scan sonar contacts are of hydrographic interest but are not a danger to surface navigation. The corridor project depth is 70 feet. None of the side-scan sonar contacts except AWOIS Item 2729 warrants charting. See section 7. a. of this report for charting recommendations on AWOIS Items 2729 and 2730.

Prior survey H-9089 (1969) is an unverified category 2 survey which covers approximately 25% of the area covered by side-scan sonar by the present survey. No present wire drag data is common to this prior survey. This prior survey is a junctional survey with the previously discussed prior survey H-9181 (1970) and combined cover 100% of the present survey. Adequate comparisons between prior hydrography and present reconnaissance hydrography are made by the hydrographer in section K. of the Descriptive Reports. Four side-scan sonar contacts; 4 and 6 (same contact), 20, 21, and 22, are common to this prior survey and all four contacts have a least depth greater than 100 feet and are therefore not a danger to surface navigation and do not warrant charting.

Prior survey 1591 (1883) covers approximately the western two-thirds of the present survey. Prior survey H-9181 (1970) supersedes this prior survey within its common area. Only the area of this prior not superseded by H-9181 was considered in comparison with the present survey. The remaining area is the same area as covered by prior survey H-9089 (1969). The hydrographer did not make any comparison with this prior survey as it was not available as noted in section 4. of this report. Therefore, no comparison between prior hydrography and present reconnaissance hydrography was accomplished as no field plots or data tapes of the present reconnaissance hydrography was included with the field records. The same four side-scan sonar contacts as noted in the comparison for H-9089 are common to this portion of the prior survey and the comparison made above for H-9089 is applicable for this prior survey.

The present survey is adequate only to supplement prior data. It was not the intent of the present survey to supersede prior hydrography.

b. Wire Drag Survey FE-241 WD (1982) - unverified

This prior survey is common to a portion of the present survey by investigating AWOIS Items 1813 (Latitude 41°10'00"N, Longitude 72°26'00"W, P.A.) and 1814 (Latitude 41°10'00"N, Longitude 72°28'00"W, P.A.) by a one nautical mile radius circle of search centered on each position and investigated by 100% coverage side-scan sonar. Two wrecks were located by this prior survey during search for Item 1813. These two wrecks were entered into the AWOIS system as Items 2729 and 2730. No wrecks or obstructions were found during the search for Item 1814. The two wrecks found were assumed to be the two wrecks sought and the hydrographer recommended that the AWOIS Items 1813 and 1814 be deleted from the charts and the two wrecks located be charted as non-dangerous sunken wrecks. No wire drag or diver investigations were conducted on these wrecks. The 1984 editions of charts 12354 and 12358 reflect this change. Although the hydrographer's recommendations appear reasonable, insufficient work was accomplished for disproval of AWOIS Items 1813 and 1814. No charting recommendations pertaining to these two items are made in this report. Charting recommendations for Items 1813 and 1814 will be addressed when this prior survey is processed.

7. COMPARISON WITH CHARTS

12354, 25th Edition, July 31, 1982
12354, 26th Edition, February 4, 1984
12358, 14th Edition, July 10, 1982
12358, 15th Edition, December 1, 1984

a. Hydrography

The charted hydrography originates with the previously discussed prior surveys. The previously discussed prior surveys require no further consideration. The hydrographer makes adequate chart comparisons in section L. of the Descriptive Reports. Additional charting recommendations are:

1) The charted non-dangerous sunken wreck on the 1984 editions of charts 12354 and 12358 designated as AWOIS Item 2729 should remain charted as a non-dangerous sunken wreck and noted as cleared by wire drag to 73 feet. This wreck was cleared in two directions with the greatest clearance depth being 75 feet and the shoalest clearance depth being 73 feet. This wreck lies in approximately 128-foot depths (from H-9181) and extends approximately 10 feet off the bottom giving a side-scan sonar computed least depth of 118 feet. See addendum for charting recommendation.

2) The charted non-dangerous sunken wreck on the 1984 editions of charts 12354 and 12358 designated as AWOIS Item 2730 should remain charted as a non-dangerous sunken wreck. This wreck was cleared by wire drag to 79 feet in one direction only. However, since this lies in approximately 131-foot depths and extends approximately 8 feet off the bottom giving a side-scan sonar computed least depth of 123 feet, it is reasonable to note on the chart the 79-foot wire drag clearance depth.

b. Aids to Navigation

See addendum for charting recommendation

Aids to navigation common to the surveyed area are adequately discussed in section L. of the R/H-20-13-83/84 Descriptive Report.

8. COMPLIANCE WITH INSTRUCTIONS

This survey adequately complies with the Project Instructions except as noted in the Descriptive Reports and this report.

9. ADDITIONAL FIELD WORK

This is a good side-scan sonar survey which serves its intended purpose. This is a good wire drag survey for AWOIS Item 2729 and adequately resolves this item. AWOIS Item 2730 was cleared in only one direction and it is desirable to obtain additional clearance in the opposite direction at an opportune time.

10. MISCELLANEOUS

a. The wire drag data smooth plotted and attached to this report was smooth plotted at the 1:40,000 scale to facilitate the inclusion of the smooth plots in this report on 8½" by 11" mylar sheets. This is

consistent with section 7.10. of the Project Instructions dated April 12, 1984.

b. No splits exist in the areas of the two wrecks cleared by wire drag.

Maurice B. Hickson III

Maurice B. Hickson, III
Cartographer
Evaluation and Analysis

INSPECTION REPORT
FE-257 WD

The completed survey has been inspected with regards to survey coverage, investigation of hangs and clearance depths, cartographic symbolization, and the verification or disproval of charted data. The side scan sonar data have been inspected to gain insight into its overall completeness regarding survey coverage, presentation of survey results, and the verification or disproval of charted data.

The survey, except as noted in the Evaluation Report, is considered completed and adequate to meet National Ocean Service standards. The survey records comply with NOS requirements except as noted in the Evaluation Report. Processing is considered complete.

Inspected

R. D. Sanocki
Chief, Hydrographic Surveys
Processing Section
Hydrographic Surveys Branch

for R. D. Sanocki
David B. MacFarland, Jr., LCDR, NOAA
Chief, Hydrographic Surveys Branch

Approved May 31, 1985

Wesley V. Hull, RADM, NOAA
Director, Atlantic Marine Center

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
OFFICE OF CHARTING AND GEODETIC SERVICES
ROCKVILLE, MARYLAND 20852

NOV 24 1989

RLA

MEMORANDUM FOR: Commander Russell C. Arnold, NOAA
Chief, Hydrographic Surveys Branch

FROM: Lieutenant Commander Maureen R. Kenny, NOAA
Chief, Operations Section
Hydrographic Surveys Branch

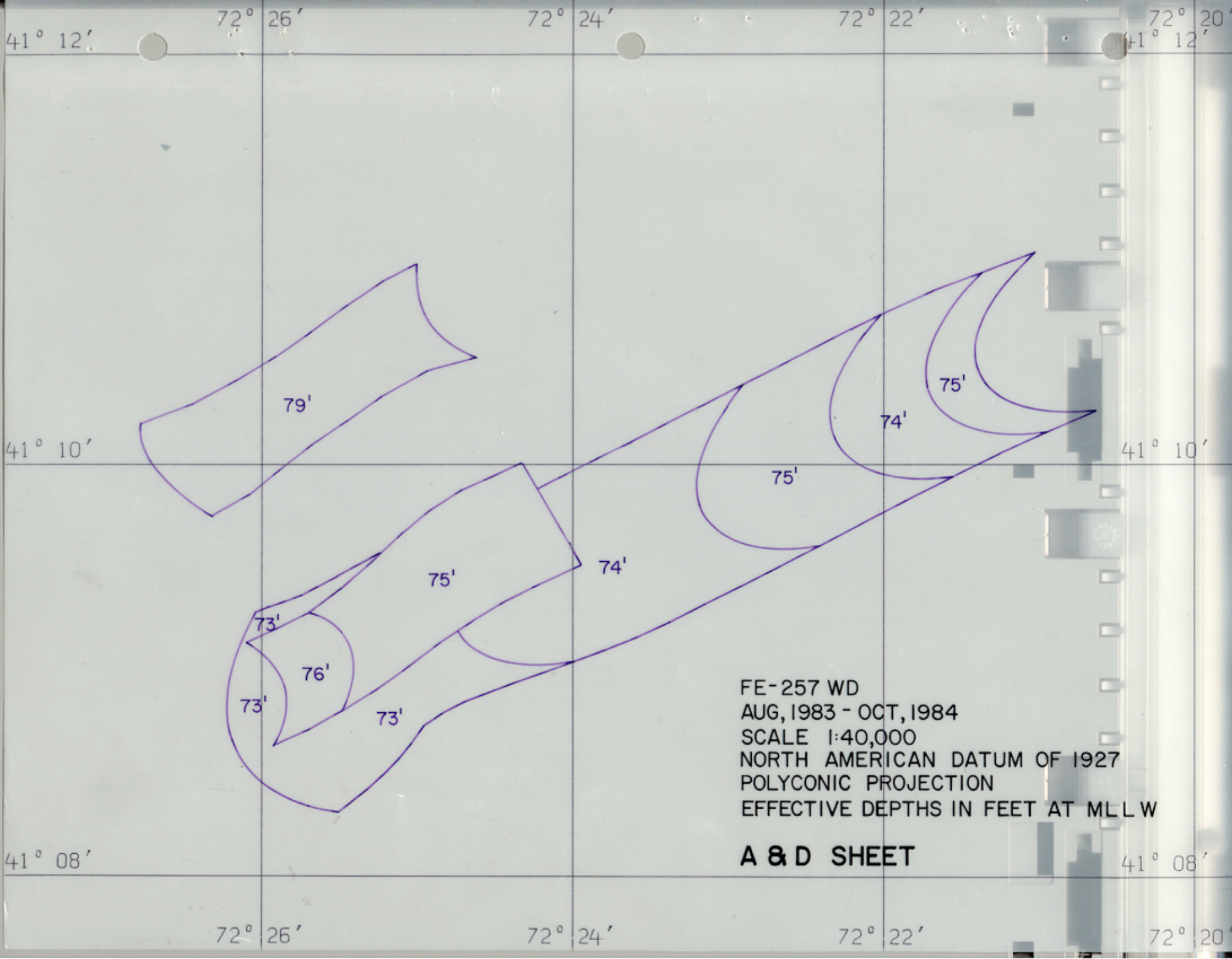
SUBJECT: Addendum to Evaluation Report for
FE-257WD (1983-84)

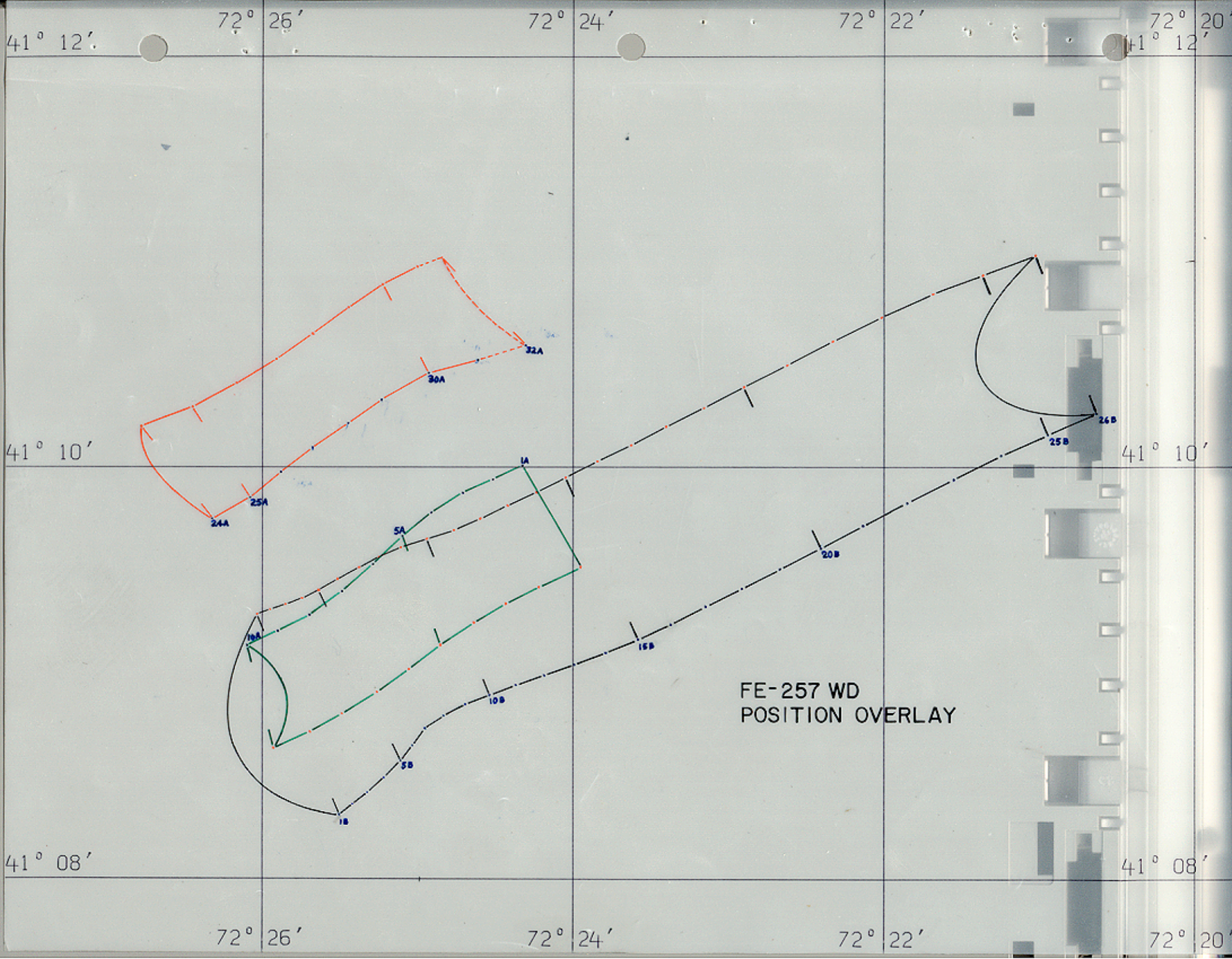
The charting recommendations for AWOIS items 2729 and 2730 were reviewed during the AWOIS update of FE-257WD (1983-84). These two nondangerous sunken wrecks were investigated during this survey using both wire drag and side scan sonar. However, the wire drag survey requirements were erroneously assigned. The clearance depths of 73 and 79 feet which were acquired are misleading; these depths approximate the ships' maximum wire drag depth capability and have no relation to a typical wire drag hang/clearance scenario. Side scan sonar evidence indicates that these wrecks would have been "hung" at approximately 120 feet had the ships had the capability to drag that deep and that they would have been cleared at some depth approximately 2 feet shoaler.

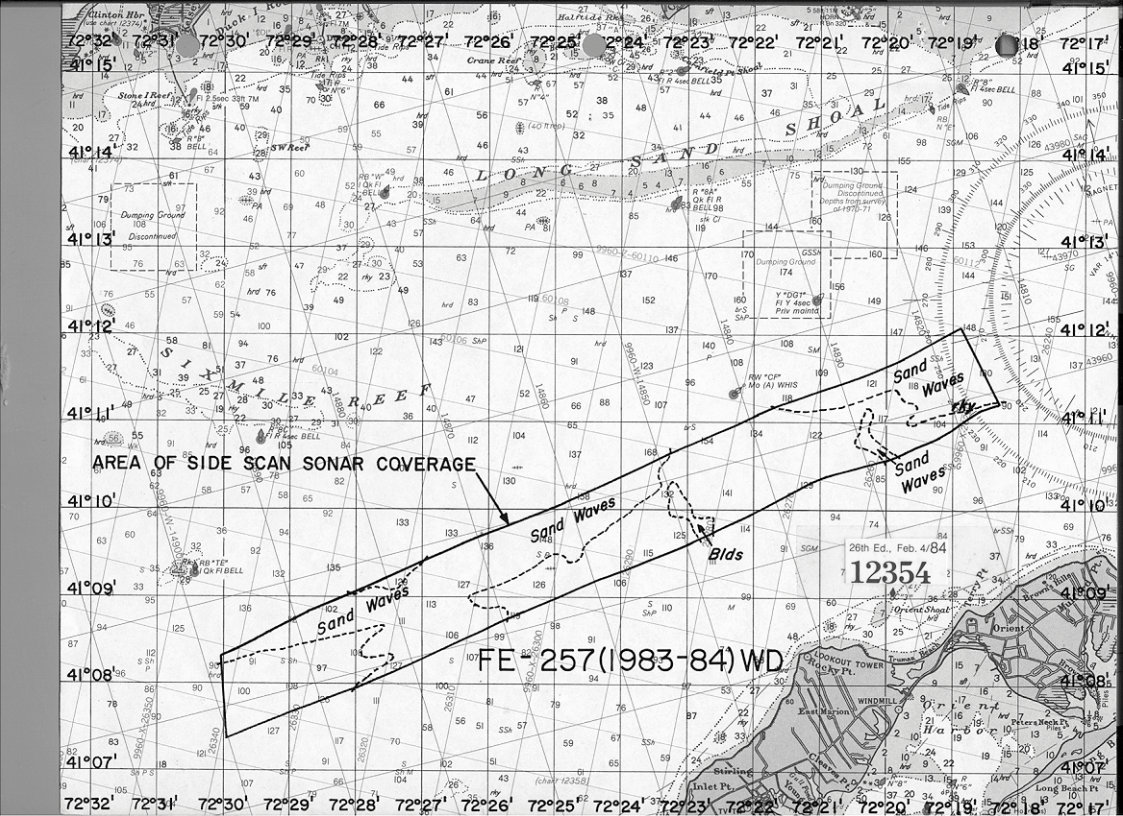
It is recommended that the presently charted wreck symbol and note be deleted, and that the computed least depths from side scan sonar be charted as follows:

Geographic Position	Currently Charted Note	Charting Recommendations
41°09'19.25"N, 72°25'04.09"W	Cleared to 73 ft	118 Wk rep 1983
41°10'29.52"N, 72°25'34.40"W	Cleared to 79 ft	123 Wk rep 1983

cc:
N/CG22x3 - Danley
N/CG244 - Lawrence


72° 26′
72° 24′
72° 22′
72° 20′
41° 12′
41° 10′
41° 08′
79'
75'
74'
75'
74'
75'
73'
76'
73'
73'
FE-257 WD
AUG, 1983 - OCT, 1984
SCALE 1:40,000
NORTH AMERICAN DATUM OF 1927
POLYCONIC PROJECTION
EFFECTIVE DEPTHS IN FEET AT MLLW
A & D SHEET


72° 26′
72° 24′
72° 22′
72° 20′
41° 12′
41° 10′
41° 08′
32A
30A
25A
24A
1A
5A
10A
1B
5B
10B
15B
20B
25B
26B
FE-257 WD
POSITION OVERLAY


AREA OF SIDE SCAN SONAR COVERAGE
FE 257(1983-84)WD
Sand Waves
Sand Waves
Sand Waves
Sand Waves
Blds
LONG SAND SHOAL
SIX MILE REEF
Dumping Ground
Discontinued
Dumping Ground
Discontinued
Dumping Ground
26th Ed., Feb. 4/84
12354
72°32'
72°31'
72°30'
72°29'
72°28'
72°27'
72°26'
72°25'
72°24'
72°23'
72°22'
72°21'
72°20'
72°19'
72°18'
72°17'
41°15'
41°14'
41°13'
41°12'
41°11'
41°10'
41°09'
41°08'
41°07'

DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Survey
Rockville, Maryland

Hydrographic Index No. 63 L

NOAA FORM 75-96
(10-83)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. FE-257WD

INSTRUCTIONS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.
1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
12354	6-11-86	H. Ladden	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 56 App'd. corrs.
12358	6-26-91	L. Arkenau	Full Part Before After Marine Center Approval Signed Via
			Drawing No. 27 Applied Corrections
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
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			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			STD'S CK'd 7-19-85
			C. Loy

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED.